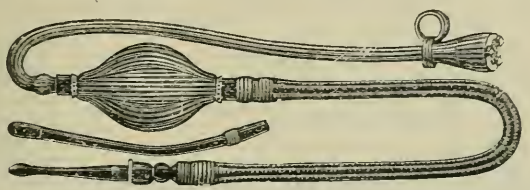
THE "SUMNA"
CONTINUOUS-FLOW SYRINGE.

(REGISTRATION APPLIED FOR.)



THE great and important feature of this Syringe is that it throws a **continuous stream of fluid**, and therefore supersedes all other syringes which are **intermittent** and invariably inject air, which is impossible with the "SUMNA."

It requires less than half the exertion to work the "SUMNA" that it does the ordinary elastic bulb syringe, and as the **flow is continuous**, it prevents the return of fecalised fluids etc., back into the syringe, which frequently happens with ordinary syringes, and is necessarily a source of great danger.

The "SUMNA" is made of the **Purest Sheet India Rubber**, and far out-lasts ordinary manufactures (which are moulded), and it is therefore considerably cheaper in the end.

The sinker being covered with rubber, it does not cause the clinking so objectionable in syringes with metal sinkers.

The pipes or fittings are made of highly-polished Vulcanite.

The price of the Instrument, with Vaginal and Rectum Pipes, in case, is **6/6**.

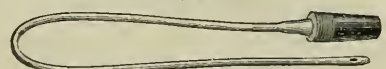
We, however, make the following additional fittings, all of which will be found **useful** to medical men, and which, together, make a most complete instrument; but any of the fittings are supplied separately.

Tube for Eye, forming Douche.
Price, 1/- each.

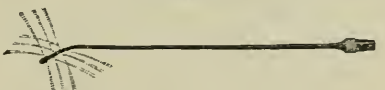
Tube for Nose and Ear, forming Douche.
Price, 9d. each.

Junction for fitting Stop-cock of Barnes's Bags.
Price, 6d. each.

Thick Uterine Tube, with groove for back flow.
Price, 2- each.



Harrison Irrigator for the Urethra.
Price, 1/6 each.



Thin Uterine Stem. **Price, 1/6 each.**

PRICE OF SYRINGE, Complete with all Fittings, in Case, 12/6.

R. SUMNER & CO.,
Wholesale Druggists, LIVERPOOL.

"ANTISEPTICINE" and its Preparations.

"Antiseptic" is a non-toxic, non-irritating, and non-escharotic antiseptic, composed of Thyme, Eucalyptol, Peppermint, Gaultheria, and Benzo-Boracic Acid. It has been found most effective in all Catarrhal conditions of the mucous membrane, and an excellent Antiseptic Dressing for wounds, either surgical or accidental.

Internally, in Diarrhœa and Indigestion, arising from fermentation, it is invaluable, and is also strongly recommended in infectious maladies, such as Scarlet, Typhoid, and other fevers, and, in fact, all Zymotic diseases. As a Spray in a sick room it rapidly purifies the atmosphere.

Price **2s. 6d.** *per lb.*

"ANTISEPTICINE" DUSTING POWDER

Is a strong Germicidal Powder for dusting fresh wounds, burns, ulcers, or any kind of suppurating surface. It is not only an Antiseptic, but a mild Styptic and Sedative, promoting rapid Cicatrisation and Granulation.

In Dusting Bottles **1s.** *each, or per lb.* **5s.**

"ANTISEPTICINE" PASTILLES.

"Antiseptic" Pastilles have been made at the suggestion of a medical man who found the "Antiseptic" itself so valuable in Throat Affections. Each Pastille contains five minims of the "Antiseptic."

In Boxes **6d.** *each,*
or in bulk, **2s. 6d.** *per lb.*

MANUFACTURED BY

R. SUMNER & CO.,

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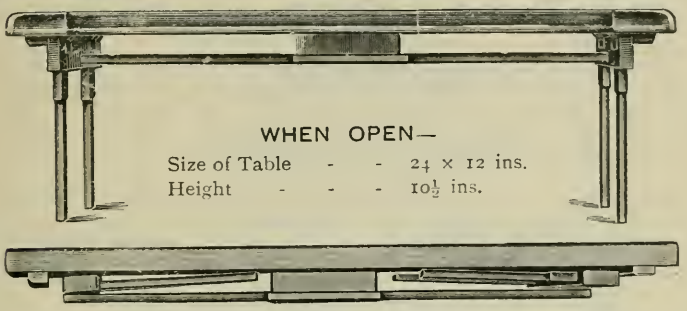
THE Universal Bed Table Townsend's Patent.



WHEN OPEN—

Size of Table - - 24 × 12 ins.
Height - - - 10½ ins.

WHEN CLOSED - Height, 1½ ins.

A GREAT BOON to Invalids, and one which enables them whilst in a sitting posture in bed to take their meals with comfort, or it can be used as a Writing Table. The advantage of this particular Table is that it is collapsible, and therefore when not in use takes little or no room for storing. ***Price 8 6 Net.***

AGENTS—

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Any Medical Gentleman who has not yet been supplied with a copy of SUMNER & Co.'s *complete Catalogue of Drugs, Instruments, and Sundries, can have one on application.*

NAUSEOUS MEDICINES and HOW TO ADMINISTER THEM.

The Liverpool Medicinal Capsules Co.

Invite the attention of the Medical Profession to their special manufacture of **Gelatine Capsules and Perles,** which have the following advantages:

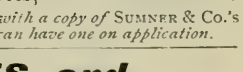
ATTRACTIVE APPEARANCE **ACCURATE DOSAGE**
FREEDOM FROM TASTE **FLEXIBILITY & SOLUBILITY.**

The manufacture is under the guidance of a Pharmaceutical Chemist, and the utmost care is exercised to insure accurate manipulation of powerful drugs.

The utmost reliance can be placed upon the contents, as none but the finest and purest materials are used.

Capsules containing from 1 to 3 minims or grains are GLOBULAR—

The Larger Sizes OVOID—



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Le Page's Improved Axis Tractor.

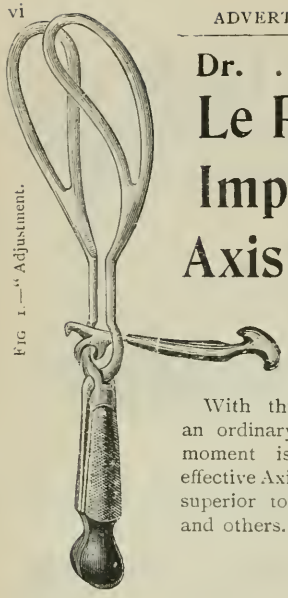

Fig. 1.—"Adjustment.

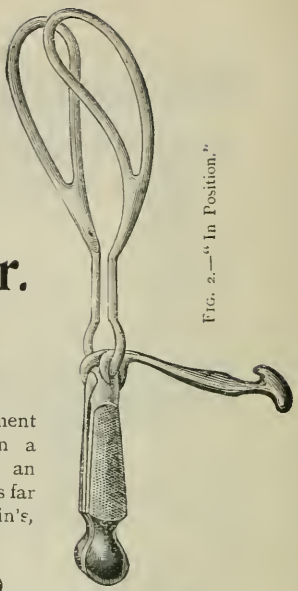

Fig. 2.—"In Position."

With this simple instrument an ordinary long Forceps in a moment is converted into an effective Axis-Traction Forceps far superior to Tarnier's, Galabin's, and others.

Figure 3 shows approximately the relations of the long Forceps, head and pelvis. The line A.B. indicates the true Axis, and A.D. the direction of power used with Forceps. A.E. is the line of traction with the Axis Tractor.

By combined use of handle and Tractor the head can be moved into any position, and traction made in any direction with the greatest ease and precision.

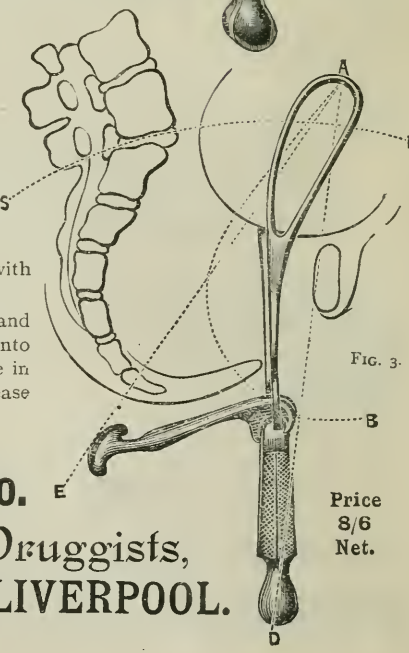

Fig. 3.

R. SUMNER & Co.

Wholesale Druggists,

LIVERPOOL.

Price 8/6 Net.

ASEPTIC CABINETS.

Manufactured of Enamelled Iron, fitted with Plate-Glass Shelves with polished edges.

No. 1.
18 by 15 by 8 inches,
2 Shelves,
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No. 2.
24 by 18 by 11 ins.,
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£3 0 0

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3 Shelves,
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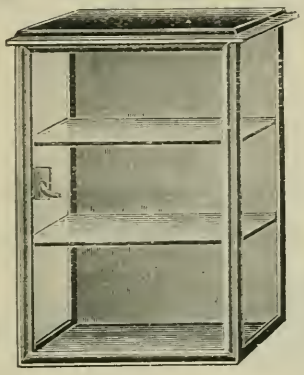


Same Cabinet but of Polished Brass, and with Mirror Bottoms;

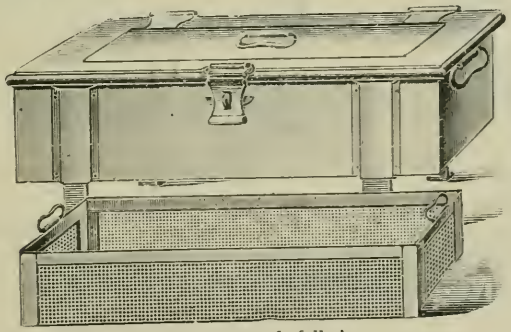
No. 1.—
£6 0 0

No. 2.—
£6 12 0

No. 3.—
£7 5 0

Full List of all kinds of Aseptic Furniture on application.

STERILIZERS FOR INSTRUMENTS.



Drawn one-sixth full size.

Tin, with Wire Basket - - - **£1 4 0**
Copper, Nickel-plated - - - **2 4 0**

List of Sterilizers adapted for all kinds and sizes of Instruments, for private use and for hospitals, on application.

R. SUMNER & CO.,

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Telegraphic Address—"TENOTOMY, LONDON."

ALFRED COX,

LATE PARTNER IN C. WRIGHT & CO.

108, NEW BOND STREET, LONDON, W.

(FOUR DOORS WEST OF BROOK STREET.)

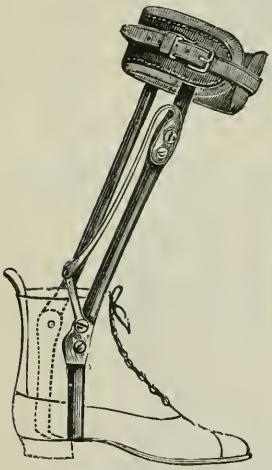
MANUFACTURER OF

Surgical Instruments,

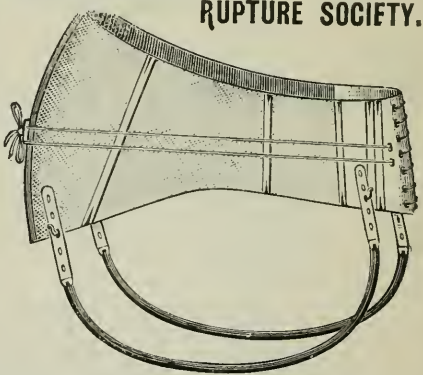
CUTLERY, BANDAGES, &c.

By Appointment to many London and Provincial Hospitals and Infirmaries; also

TRUSS MAKER TO THE RUPTURE SOCIETY.



Short Double Leg Irons, with Boots and Elevating Toe Springs, for Partial Paralysis of the Feet.



Belt for Abdominal Support, Floating Kidney, or Umbilical Hernia.

SPECIALITIES . . . .

ELASTIC STOCKINGS, BELTS, and TRUSSES
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WATER BEDS, CUSHIONS, and BOTTLES
SELF-INFLATING AIR CUSHION, Washable.

ALL ORDERS PROMPTLY AND CAREFULLY EXECUTED.

EXPERIENCED MALE AND FEMALE ASSISTANTS always in Attendance, and when required wait on Customers in Town or Country.

Hunyadi János

A VERY INTERESTING and important contribution on Natural Mineral Waters of the purgative saline type was published in the report of a Special Analytical Commission in THE LANCET of December 5th, 1896. This report is made all the more interesting and reliable from the fact that a LANCET Commissioner personally visited the Saxlehner Springs, near Buda Pesth, and obtained samples on the spot, which were subsequently analysed in THE LANCET Laboratory, and the results obtained compared with samples purchased at a number of shops in London. The results showed that HUNYADI JÁNOS, the Prototype of all Bitter Waters, was, wherever it might be obtained, a water showing a perfect uniformity of composition, and one that could be relied upon absolutely as at all times being identical with that drawn from the Spring and fountain head. The numerous analyses in THE LANCET Report give very striking evidence not only of the honesty of the water, but bear out also the remarkable uniformity of composition that has characterized HUNYADI JÁNOS for a third of a century. Thus, the results recently obtained in THE LANCET Laboratory accord exactly with those obtained in Liebig's Laboratory over thirty years ago. Nothing could be more satisfactory than this from the therapeutic point of view. Practitioners can thus depend upon the water they prescribe, and may be assured that when HUNYADI JÁNOS is administered the medicinal effects will always be the same, and with the same good results. As is pointed out in the Report, an important feature in HUNYADI JÁNOS Water is the constancy of ratio of the active saline constituents to each other The sodium and magnesium sulphates are together in almost exactly equal proportions, so that what therapeutic property is lacking in the one is balanced by the other. Neither the sodium sulphate nor the magnesium salt are in excess of each other. In this way the purgative effect is not drastic, but mildly yet decidedly effective. Again, besides these chief medicinal salts there are present in important quantity also in HUNYADI JÁNOS Water, Sodium Chloride, Sodium Carbonate, and Lithium Chloride. It cannot be doubted that each of these constituents contributes towards the favourable action of the water, which has for so long been a distinctive and satisfactory feature attending its administration. Last, but by no means least, the report of THE LANCET Commission shows that HUNYADI JÁNOS Water is bottled under admirable sanitary precautions. In the details of the analyses given there was not the slightest indication that HUNYADI JÁNOS Water contained any objectionable organic matter from whatever source. While, therefore, the medicinal properties of HUNYADI JÁNOS as a natural aperient are sure and reliable, it is safe also from the very important fact of its extreme organic purity.

PROPRIETOR:

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(Registered).

ADVANTAGES:—

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2.—Rubber is fixed at any point
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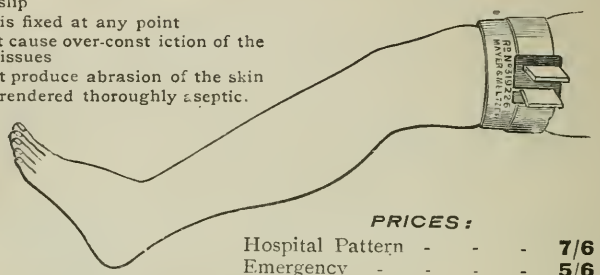
5.—Can be rendered thoroughly aseptic.



PRICES:

Hospital Pattern - - - **7/6**
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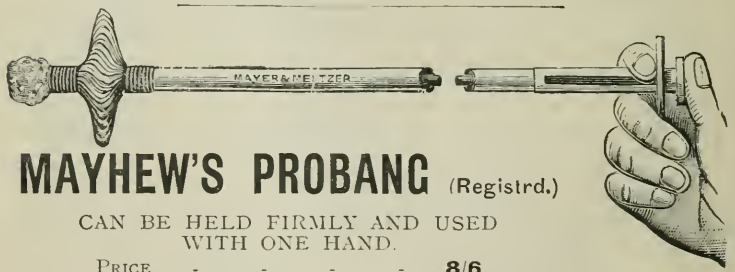
Its Practical Application.

A Translation of Lectures delivered by AURELIO BIANCHI.
With 37 Illustrations, bound in cloth, **3/-**
Supplied with **Phonendoscope, 17/6**



MAYHEW'S PROBANG (Registrd.)

CAN BE HELD FIRMLY AND USED WITH ONE HAND.

PRICE - - - - **8/6**

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MAYER & MELTZER,

Surgical Instrument Makers

To University College Hospital, Hospital for Women, Hospital for Diseases of the Throat, etc., etc..

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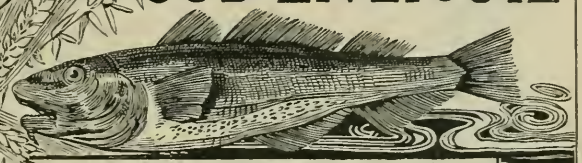
Branches—MELBOURNE and CAPE TOWN.

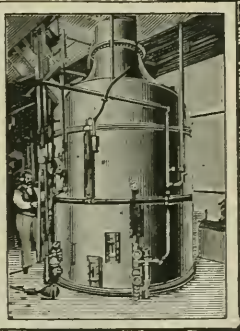
Telegraphic Address—"Trephine London. *Telephone*—No. 5574 Gerrard.

MALTINE WITH COD LIVER OIL



A COMBINATION of "Maltine" and 30 per cent. of the Purest Norwegian Cod-Liver Oil. The combination of the Oil with "Maltine" is effected by an ingenious vacuum process original with the MALTINE MANUFACTURING COMPANY, which admirably disguises the disagreeable odour and taste of the oil, prevents rancidity, and assures stability.

"The therapeutic value has been so thoroughly recognized and is so well known. . . . . Patients unable to tolerate the purest and most carefully prepared Cod-Liver Oil can readily digest and assimilate it when combined with 'Maltine.' . . . We can recommend it on the ground of its perfect admixture, the ease with which it is assimilated, the good quality of the Cod-Liver Oil, and the value in diastase of the 'Maltine.'" —*British Medical Journal.*



In prescribing "Maltine" preparations, to avoid mistakes or substitution, kindly specify "MALTINE COMPANY."

Samples sent free of Charge to Physicians.

The Maltine Manufacturing Co. Ld.

24 & 25, HART ST. BLOOMSBURY, LONDON, W.C.

BRAND'S NUTRIENT POWDER

(DENCE'S PATENT)

FROM RAW MEAT.

THIS article consists of powdered muscle fibre only, from which the moisture has been removed at a temperature below the coagulation point of the muscle proteids. It is sterilized and tasteless, and contains all the constituents of lean meat in an unaltered condition.

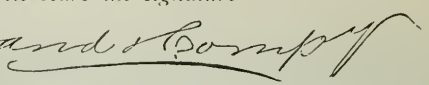
One ounce of the Powder is equivalent in nutritive value to four ounces of Fresh Lean Meat.

Its great dietetic importance to Invalids consists in the ease and completeness with which it can be digested, and in the fact that it can be assimilated with a minimum of effort upon the part of the digestive organs.

In the process of manufacture **nothing is removed except the water of the fresh meat, its taste and odour, and the tough, stringy and indigestible portion rejected in sifting.**

One to two ounces taken daily (equivalent to four or eight ounces of fresh lean meat) will suffice for the complete maintenance of the body-weight and healthy functions of an invalid person in a state of convalescence.

Each genuine article bears the signature—



Prepared by BRAND & CO. Ltd.,

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The Safeguard against Bad Drinking Water.

STILL.

NATURAL

Malvern Water

The "ALPHA BRAND,"

FROM THE

Historic Spring

IN THE POSSESSION OF

W. & J. BURROW.

SPARKLING.

The Purest of all Natural Table Waters.

"LITHIATED MALVERNIA."

THE BEST REMEDY FOR GOUT.

The Solvent qualities of the Malvern Spring aid the action of Lithia in a remarkable degree.

Far more efficacious than the ordinary Lithia Water.

Be careful to order

BURROW'S "LITHIATED MALVERNIA."

W. & J. BURROW,

THE SPRINGS, MALVERN.

TELEGRAMS: "SPRINGS, MALVERN."

BATTLEY'S SOLUTION OF OPIUM.

LIQUOR OPII SEDATIVUS (BATTLEY).

Strength—Twice that of Tinctura Opii B.P.

Battley's Solution of Opium may be given with the greatest of safety in those cases where an opiate is required or indicated, and from its great purity, absence of all hurtful matter, such as narceine and resinous bodies, is admissible when all other preparations would prove hurtful.

Liquor Opii Sedativus (Battley) having now existed for nearly 100 years, and after being opposed by vain and worthless opponents has upheld its old position as "Second to None" in the Hypnotic World.

Battley's Solution of Opium has none of the disagreeable after-effects that most soporifics and hypnotics have, no nauseating or depressing influences with racking headaches, etc., but exercises a quieting and benign sway over the patient, giving him or her a refreshing sleep with freedom from pain. The last few years it has come to the front in cases of Cancer and Sarcoma, having been used widely both in private and hospital practice with great ease and comfort in these instances.

Battley's Solution of Opium never varies in strength.

Battley's Solution of Opium does not leave behind it any unpleasant effects.

Battley's Solution of Opium is now in use throughout the United Kingdom; throughout the Continent (France excepted); the Colonies, and largely in America, both South and North; and we ask all those who have not tried Battley's Solution of Opium to send for Samples (Free).

The "Medical Annual," speaking of Opium says: **"Battley's Solution of Opium** is a common word in the Practitioner's vocabulary. It has gained its reputation by its intrinsic value as a remedy which contains all that is sedative and anodyne in opium without its resinous constituents which are, therapeutically speaking, impurities."

The "Lancet," speaking of Opium, says: "New Hypnotics come and go, each with hopeful forecast of being superior to those already known, each in turn aspiring to give **peaceful refreshing sleep,** which shall be followed by no **unpleasant after-effects;** and yet, in the minds of many thoughtful practitioners, opium and its preparations still maintain their ground." We would point out to the Medical Profession that Battley's Solution of Opium has for the past eighty years answered these **three** most important requirements, and stands out above all other hypnotics in excellence.

LIQUOR OPII SEDATIVUS.

The striking appearance resulting from the evaporation of Battley's Sedative (*Plate III. Fig.* 1) first drew our attention to the mode of investigation now described. We have examined it frequently, and always have met with the same characters. The slides present an almost opaque mass of crystals of morphine salts and codeine, with a very small portion of narcotine (and meconic acid ?), and so far as we have observed, complete absence of resinous matter and narceine. **Any one who has studied the microscopic characters of this preparation will readily understand how it has kept its place with the Profession in spite of the cheap imitations which have been so largely puffed as substitutes for it.** Though we have experimented much with a view to preparing a similar liquor, we have not yet arrived at an identical result.

We do not guarantee our Preparations unless in original bottles, with the autograph of RICHARD BATTLEY over each cork and on the label, *without which none is genuine.*

Scott's Emulsion

In Diabetes, Gout, Rheumatism and Bright's Disease.

Should the physician desire cod-liver oil to be a part of the treatment of any of the above diseases, and should he prefer an emulsion of this oil, he will undoubtedly be pleased to know that the sweet taste of Scott's Emulsion is due to GLYCERINE, and not to sugar. We do not use sugar to make our preparation palatable. There is consequently no danger from uricacidæmia or glycosuria.

The value of glycerine in Scott's Emulsion cannot be too strongly emphasized. Nature makes glycerine in the digestion of fats, showing the need of it. The glycerine also facilitates the absorption of the oil, thus further promoting the final object toward which the minute and permanent division of the oil is the first step.

Add to this combination of cod-liver oil and glycerine, the hypophosphites of lime and soda, and you certainly have a preparation that merits at least comparative tests.

SCOTT & BOWNE, Ltd., Manufacturing Chemists, LONDON, E.C.

NESTLÉ'S FOOD

An ENTIRE DIET for INFANTS, CHILDREN AND INVALIDS.

"Renders valuable assistance in Wasting Fever."

"Beneficial as a diet in severe cases of Typhoid."

"Invaluable in Cholera Infantum."

Pamphlet containing Extracts from Standard Medical Works in which the above Testimony is given sent free, with Sample Tin, on application to H. NESTLÉ, 48, Cannon Street, London, E.C.

The attention of the Medical Profession is also drawn to

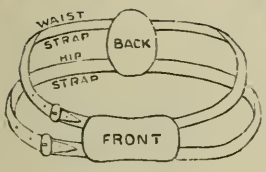
NESTLÉ'S SWISS (CONDENSED) MILK

Which, through its RICHNESS in CREAM and UNIFORMITY of QUALITY, has obtained the Largest Sale in Great Britain. It can be used for all purposes of FRESH MILK.

Samples to Members of the Medical Profession only sent free on application to H. NESTLÉ, 48, Cannon St., London, E.C.

HAMBLY'S
PERFECTION ADJUSTABLE BINDER.

No Lady's Wardrobe complete without it.



TO BE WORN THUS.

ADVANTAGES:

1.—No measurements are required, *adjusts itself to any figure.*

2.—Does not get out of place, accommodates itself to every movement.

3.—Gives great support, and is more comfortable than any other.

4.—Is cooler and better adapted for summer wear and hot climates than other belts, as it does not compress or confine the body.

These Belts support and strengthen the figure, are invaluable for Stout Ladies, as well as for use before and after Accouchement, and for "Special Cases."

Should be worn by all who cycle, row, ride, play golf, tennis, &c.

TESTIMONIALS:

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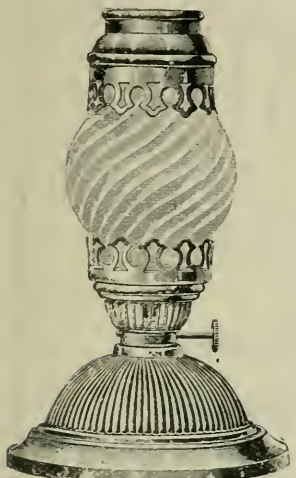

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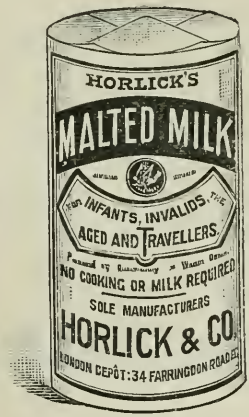

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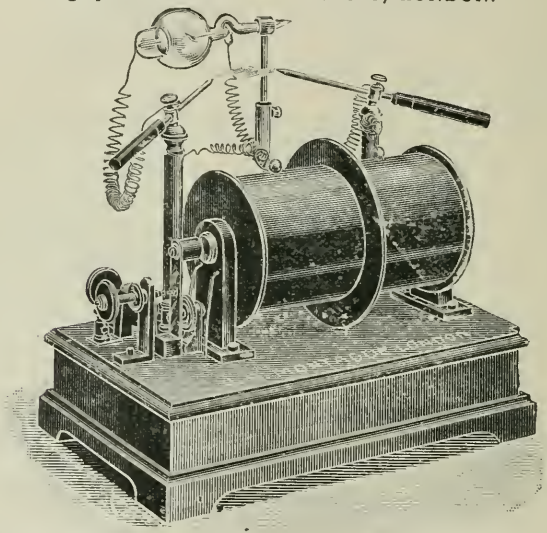

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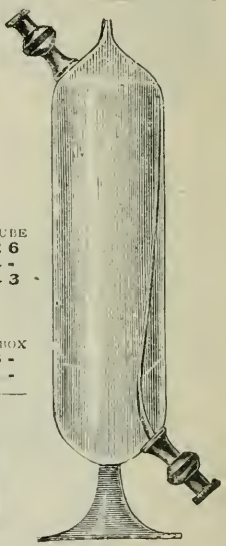

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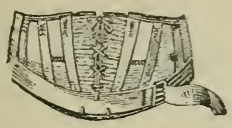

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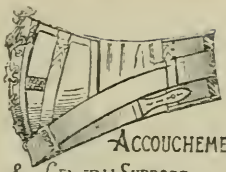

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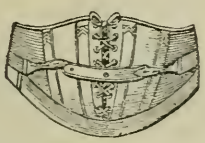

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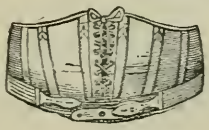

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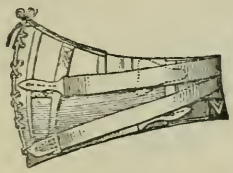

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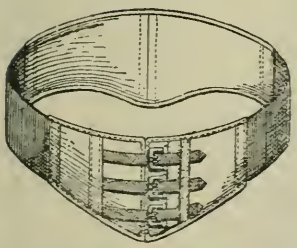

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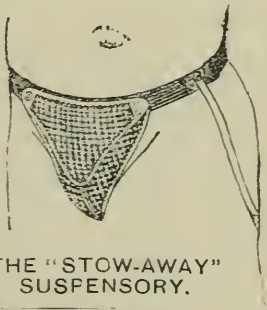

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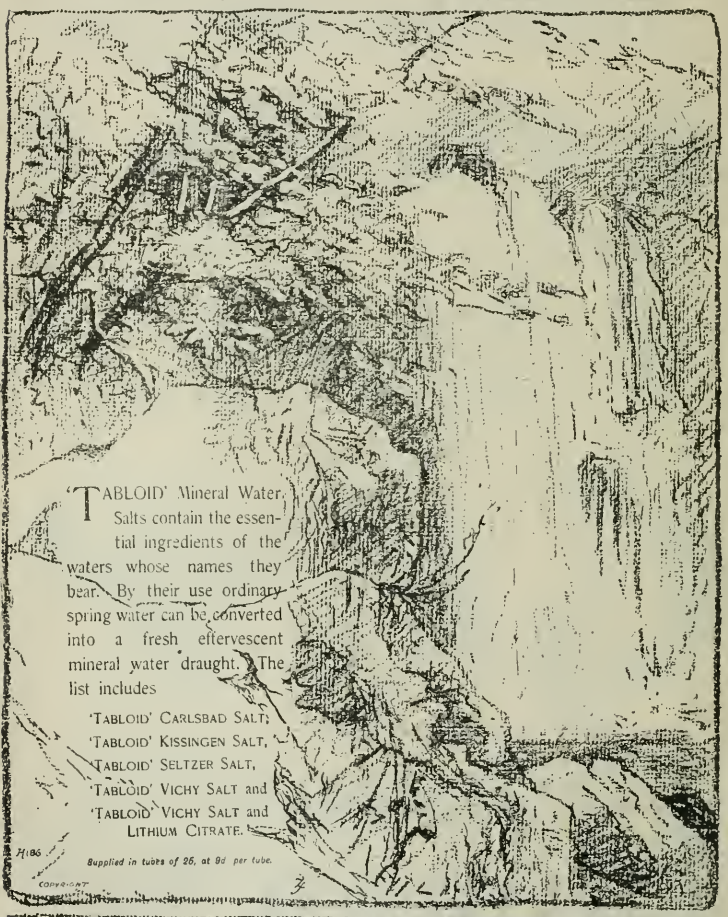

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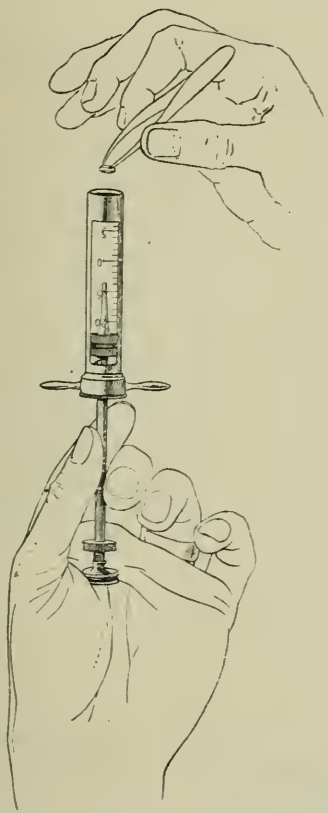

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For full particulars and list see *Wellcome's Medical Diary, 1900.*

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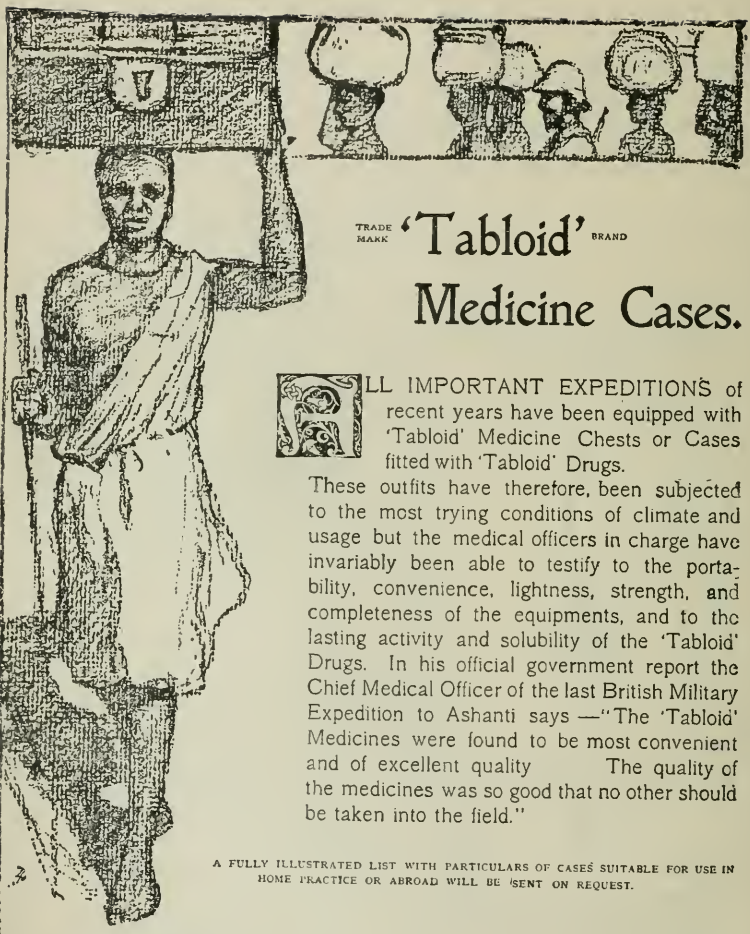

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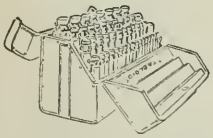

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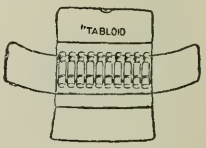

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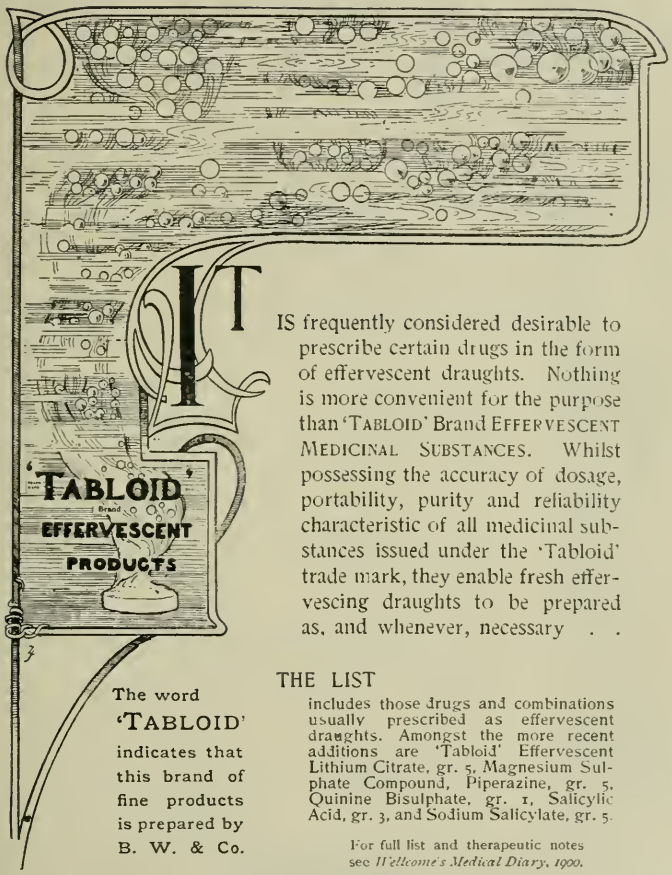

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For full list and therapeutic notes see *Wellcome's Medical Diary, 1900.*

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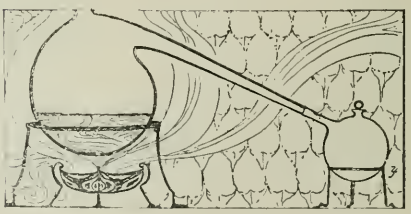

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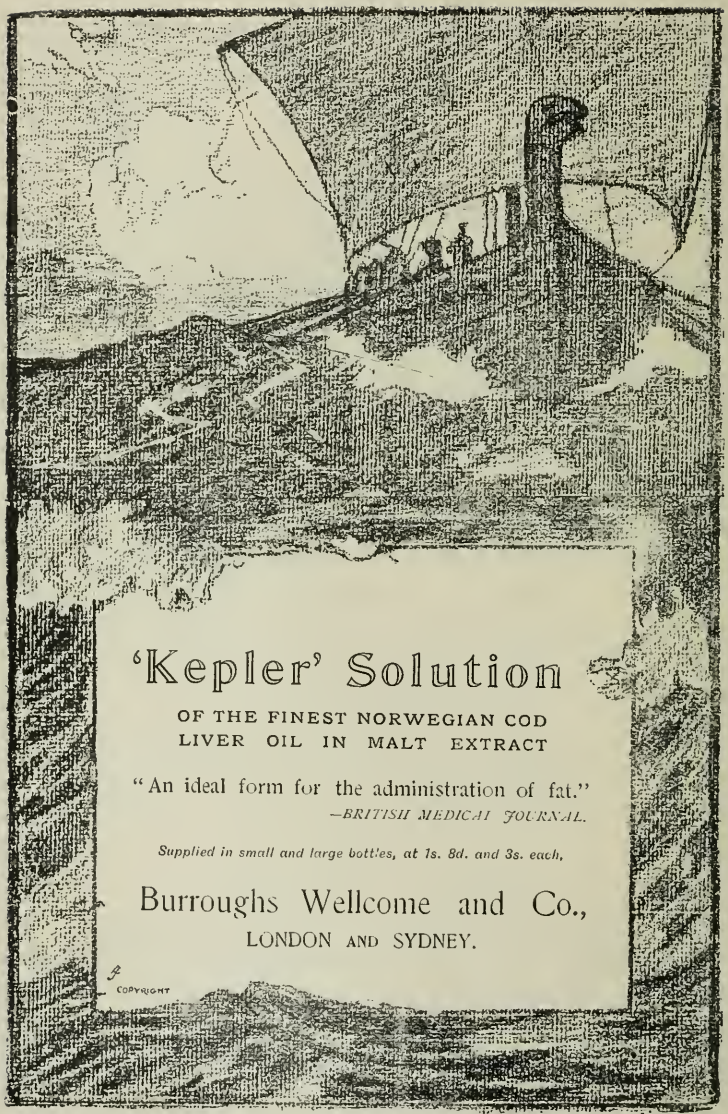
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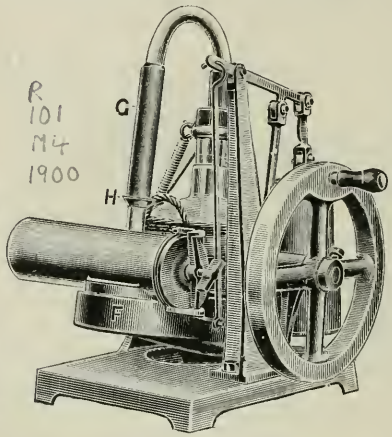

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PREFACE.

This, our eighteenth annual issue, will be found to contain an unusual number of practical articles covering nearly the whole range of medicine and surgery.

While it is our primary object to condense and arrange the information which appears in current medical literature, we have always tried to provide as much original matter as possible, especially in regard to subjects which are either novel, or which have been raised to importance by recent research. By asking those to whom we are chiefly indebted for fresh knowledge, to contribute articles, we enable our readers to secure information at first hand, and by illustrating the articles in colours or black and white, we can present them in a form which we hope carries the eye from the picture to the page, and secures the attention of the most casual reader.

It is interesting, at a moment when the Medical Staff Corps are distinguishing themselves in the actual duties of war, that two of our special articles representing original work of great clinical value should be by military members of the profession. Major Ronald Ross gives an account of his brilliant discoveries respecting the nature and prevention of Malarial Fever, and Colonel Keith Hatch by his clinical description of Mycetoma, assisted by his original coloured illustrations, has represented this little known disease so realistically that no reader of the "Annual" would fail to recognise it.

Some subjects in this volume are treated more fully than might be expected in a work which aims at brevity, but there are always diseases which require bringing up to date from time to time, and which cannot be dealt with so satisfactorily by a collection of abstracts.

We are always ready to consider any suggestions from our readers who find a difficulty in securing information respecting a particular subject. In such cases we endeavour to provide, in the next issue, an article by the best available specialist. We are anxious to keep in touch with the needs of the profession, because it is only by doing so that we can hope to maintain the position which has been so generously accorded us in the past.

In many instances the information wanted will readily be found by referring to the recently published "Synoptical Index" to the "Medical Annual," which we are glad to find has received a warm welcome from our subscribers.

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THE MEDICAL ANNUAL.

Part I.—THERAPEUTICS.

The Dictionary of New Remedies,

AND REVIEW OF THERAPEUTIC PROGRESS FOR 1899.

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INTRODUCTORY.

In the "Medical Annual" for 1899 it was pointed out that Pharmacology was temporarily under a cloud, and that we might have to wait for some years for a revival in this particular form of industry. This statement is as true to-day as it was a year ago. The past twelve months have brought forth no pharmacological contributions of primary importance, and even good therapeutical papers have been wanting. The explanation of this, at all events as regards England, is easily found. Pharmacology is no longer a compulsory subject for examinational purposes, and is no longer taught in our schools. A race of men is growing up who know nothing about drugs or their actions, and who are often incapable of prescribing the simplest mixture. The younger men in our hospitals have long since ceased to regard pharmacology as a paying subject, and have consequently ceased to devote any attention to it. That the practical abolition of pharmacology from the curriculum of the London schools was a mistake is now generally recognised, but the prospect of its being reinstated, at all events for a considerable period of time, is very small.

Dr. Bradbury's remarks made at the opening of the section of pharmacology and therapeutics at the annual meeting of the British Medical Association, at Portsmouth, in August last, are to the point and are worth quoting. He says: "For some time my mind has been exercised as to the proper place of pharmacology in the medical curriculum. So far as I can make out there is a growing tendency for medical corporations (if we except the universities) to require less and less knowledge of the natural history, properties, composition, and action of drugs, from candidates for their

diplomas; a condition of things which I think is much to be regretted. Personally I have no wish to revert to the state of affairs when candidates were expected to have a minute knowledge of the distinctions between the different species of senna, and of cinchona bark, etc.; but the danger now is that they may not be able to recognise senna at all, or to know the ingredients and doses of the most important pharmacopœial preparations. The consequence is, when settled in practice, that they are tempted to prescribe ready-made tabloids, elixirs, etc., the purity and the precise dose of the ingredients of which have no official sanction. Far be it from me to speak too disparagingly of these products of the chemist's ingenuity; in many cases they are most useful and valuable on account of their easy portability.

"Think for a moment of what is required of a medical man once started in practice. A considerable part of his work is writing prescriptions for his patients, and yet in respect of the knowledge of drugs and their actions I maintain his education is often most imperfect. This brings me to the subject of pharmacology, or the action of drugs on the body in health and in disease. Is it too much to expect those who are daily to prescribe remedies to be acquainted with what is known of their actions? Certainly not. Well, then, how can this best be taught, and where in the student's course should it come in?

"I think after anatomy and physiology, and alongside of pathology, I would make the first part of the final examination pathology and pharmacology—the sciences dealing respectively with disease and its treatment—and then the student should at the next stage be ready to apply the principles thus acquired to actual practice in connection with his clinical medicine, surgery, and midwifery.

"The more intimately a student knows the action of the drugs he prescribes, the greater will be his success in treatment, and it is much to be regretted that some of the Examining Boards require a student to acquire this knowledge only in a haphazard way, or at a premature stage of his course. He cannot appreciate physiological action until he is possessed of the elements at least of physiology. On the other hand, he cannot appreciate the importance of judicious prescribing, unless he has learned the nature and properties of the agents prescribed. These two considerations seem to me decisive as to the exact place in the curriculum at which pharmacology should be introduced.

"I believe I am correct in stating that every German university demands of its students a knowledge of pharmacology, and that the

subject is regularly taught in those universities. It has been said that the medical student is already over-burdened with subjects. That may be, but I would say, Lighten some of the other less necessary subjects, and encourage him to give more attention to knowledge which when in practice he will daily and hourly be called upon to use."

The only exception to the statement that no progress has been made in pharmacology and therapeutics is in the domain of glandular and serum treatment. As regards remedies of glandular origin it is probable that the thyroid has been pretty well worked out. It has been admitted into the Pharmacopœia and is universally prescribed. It is the recognised remedy for **Myxœdema, Cretinism, Psoriasis,** and **Obesity**, and has attained some measure of success in other diseases. The supra-renal capsule comes next in importance, and although there may be some doubt as to its value in the treatment of **Addison's Disease,** it has in some cases yielded very good results. The other members of this group, such as the thymus, pituitary substance, cerebral and spinal cord substance, are still on their trial, and it is difficult in our present state of knowledge to say what their future may be. Bone marrow has yielded excellent results in some forms of **Pernicious Anæmia,** and there seems to be little doubt that in time it will come into general use.

Of some of the serums we can speak very hopefully. The antidiphtheritic serum is undoubtedly a success, and if fewer papers have been published on this subject during the last twelve months than in previous years, it is probably because its utility is so generally recognised that men in active practice hardly find it incumbent on them to record their results. The antistreptococcic serum is rapidly coming to the front, and is now largely employed in most of our hospitals in the treatment of **Erysipelas** and allied conditions. The fact is now generally recognised that if it is to do any good it must be given early and in large doses. There is no excuse for delay, for it is obtainable at a moment's notice at any hour of the day or night. The antitetanic serum is a valuable accessory in the treatment of **Acute Tetanus**, but it does not obviate the necessity for surgical and other modes of treatment. Respecting tuberculin R, we have heard very little of late, but it is undoubtedly useful in some cases of **Phthisis**, the great drawback to its more general employment being the absurdly large price at which it is sold. A remedy which costs 4s. 2d. for an ordinary maximum dose is practically prohibitive, especially when seventy or more doses may have to be given in the treatment of an ordinary case of consumption.

Many synthetical products of German origin, which a few years ago were introduced as analgesics or as substitutes for iodoform, have little by little dropped out and are apparently no longer prescribed.

The General Medical Council has issued—apparently for private circulation—a report from the Pharmacopœia Committee on the proposed Indian and Colonial Addendum to the British Pharmacopœia of 1898. They offer certain suggestions for consideration by the medical and pharmaceutical authorities in India and the Colonies. Amongst other remedies which they propose introducing are *Agropyrum* or Couch Grass, which has long been in use in this country as a diuretic and a remedy for bladder troubles; *Aurantii cortex indicus* or Indian Orange Peel; Betel, the leaves of *Piper betel cosciniuni*, a bitter tonic allied in action to Calumba; *Crinum*, a substitute for Squill; *Exacum* for use in India as the equivalent of Chiretta; *Cotton Root Bark*, which has a popular reputation for producing abortion; the lactifuge *Jasmine; Mylabris*, a blistering agent; and *Tylophora*, which is allied in action to Ipecacuanha; *Grindelia robusta*, which has long been familiar to us as a remedy for asthma, is also said to be under consideration. Respecting the date of issue of this Indian and Colonial Addendum we have no information.

Rotation of Remedies.

Dr. William Ewart[1] points out that there is no novelty in the occasional interruptions for rest in the monotony of prolonged courses of treatment. Indeed, with some drugs, a periodical rest has been recognised as an advantage, with others as a necessity. Nevertheless, at least in this country, the prevalent method of administration is one in which the gradual development of a toleration for the remedy which is continuously administered for prolonged periods is not always taken into practical account.

(1,) Some drugs—and these are chiefly the stimulants and the sedatives—lose more and more of their effect the longer they are continued.

(2,) Other drugs, being slowly eliminated or distinctly cumulative, acquire through prolonged administration an increased activity, and in some instances a modified, and sometimes a dangerous, action.

(3,) The most active dose, in the case of any stimulant or sedative, and in that of many tonics, is (putting aside summation of doses or of their effects) the first dose.

These considerations have led the writer more and more to the adoption of a principle which may be regarded as novel, less in itself than in its practical application, that of a systematic "rotation of

drugs," which, not unlike the farmer's "rotation of crops," rests as well as fertilises.

Without advocating an excessive polypharmacy, the author believes that patients may often be placed with advantage under the joint influence of several drugs; but he also believes that they would derive most benefit from a frequent renewal (thanks to intervening breaks) of the first impression which had been produced by each drug. An alternating rotation—daily, tertian, or of any other period—of the drugs to be administered would work in that direction, not with one drug only, but more or less in the case of each of the remedies included in the series.

The same practical rules and management could not be consistently applied to all groups of remedies, nor even to the several members of each group; and this remark unfolds at once the wide scope of this subject; but the present being merely a preliminary communication, its details cannot be gone into. The chief clinical points are the opening which the adoption of this method would supply for almost unlimited ingenuity and judgment in varying the combination of drugs and the order and periodicity of their rotation, to suit the individual cases.

REFERENCES.—[1] "Brit. Med. Journ.," Oct., 1898. For Dr. Heron's observations on the new Tuberculin, see "Brit. Med. Journ.," Oct. 14, 1899.

ACONITE.

Cash,[1] of Aberdeen, has made an exhaustive investigation into the pharmacology of *Aconitum napellus*.

The alkaloids derived from the monkshood have received much attention from both chemists and pharmacologists since the time when Stoerk indicated the importance of this plant as a therapeutical agent. Before the close examination of the active principles of a plant can be carried out, their separation from one another in a state of purity is essential. Dunstan and Carr have devoted much time to the separation of the aconite alkaloids and the determination of their chemical properties, and have recognised two other alkaloids in addition to aconitine as present; to these the names of benzaconine and aconine respectively have been given.

One main reason for the thorough investigation of these bodies lay in the fact that many aconitines which have been employed, more especially abroad, have been found to be far below the strength of a pure specimen of aconitine of British preparation. It is now evident that many of these samples, especially of German manufacture, have consisted to some extent of the two alkaloids just mentioned—benzaconine and aconine.

From experiments on rabbits and frogs it is found that aconitine is approximately 200 times as toxic as benzaconine, and 2,000 times as toxic as aconine.

Aconitine produces a slowing and steadying of the pulse, with slight fall in blood pressure when given in small doses, this effect being mainly attributable to a stimulation of vagus roots and a slowed cardiac rhythm. In so far its effect is producible by small doses of the tincture of aconite when given in sharp febrile conditions ; the respiration is steadied and diaphoresis is produced. But after larger doses the further action of the alkaloid begins to develop, as shown by pulse acceleration, and following this an occasional imperfect or missed pulse due to the failure of the ventricle to perform a propulsive systole. An arrhythmic systole of the auricle occasionally originates this condition. There is no failure during this stage in the myocardium, the excitability of which is actually increased. Although there is some evidence that the sequence of ventricular upon auricular action is interfered with this effect is slight in comparison with that which ensues in the next stage, for in this a large proportion of the ventricular beats may have no auricular precedent. Thus the rhythm may be as 2 to 1, or periods of independent action alternate with due sequence, so occasioning great and rapid fluctuations of pressure. During part of this phase, vagus stimulation often raises the pressure by promoting the tendency to a natural sequence. The pulse is of course greatly accelerated and of the most irregular character. Finally, ventricular delirium, without more than an occasional trace of co-ordination, supervenes, death speedily resulting. In this delirium the auricles do not participate. Ventricle is throughout synchronous with ventricle and auricle with auricle. Death is primarily due to respiratory failure, for after a temporary stimulation of the respiratory centre a depression ensues, and the sensory fibres of the pulmonary vagi are paralysed. The movements become slow and dyspnœal in character, even after sublethal doses of aconitine. As regards the central nervous system, stimulation of the medullary centres yields to depression, though the vasomotor is relatively only slightly involved. Spasm is mainly respiratory in origin, but not exclusively so. General sensation is impaired, and to this in minor degree the value of aconitine taken internally in severe facial neuralgia is due. Whilst the peripheral sensory nerves are strongly depressed (hence the main use of the local application of aconitine ointment in neuralgia), the motor nerves are scarcely at all affected, and the same may be said of skeletal muscular tissue. Twitching of the muscle bundles, which is often observed as a local effect of aconitine, may

modify the curve of muscular contraction; it is due to the stimulation of the nerve-end plates, and is abolished by curare. The body temperature falls after quite small doses of aconitine; the less the surface is protected from loss of heat the greater is the total reduction. This effect is largely due to circulatory and respiratory changes and to increased diaphoresis, whilst the reduction of protoplasmic oxidation (due to aconitine) acts in the same direction.

The alkaloid benzaconine, though much less toxic, has an interesting and pronounced action. It is bitter, but does not cause tingling or numbness of the mucous surfaces. It slows the heart beat, and that often to an astonishing extent, but its effect is brought about in an altogether different way from that following aconitine. Not infrequently the slow deliberate pulse following benzaconine represents a ventricular effort which has two or even three auricular predecessors, so that a certain number of the latter have failed to rouse the ventricle to action. It is certainly a condition of asequence, but of an almost reversed character to that following aconitine. The ventricle never beats without a precedent auricular effort, that is to say, the complete dislocation of rhythm seen after aconitine has no parallel here. A block in motor impulses between auricle and ventricle is present, and in addition times of absolute quiescence in the heart walls (auricular as well as ventricular) show that the apparatus upon which the origination of motor impulses depends is gravely involved. Such pauses end by the auricle spontaneously resuming action. There is some antagonism, as may be readily foreseen, between this body and aconitine with respect to their action on the mammalian heart. Whilst the blood pressure is greatly reduced, benzaconine is not lethal owing to its action on the heart, but rather from respiratory failure. No acceleration of the respiration precedes the slowing induced by benzaconine. Unlike aconitine, this body leaves sensory nerves almost unaffected, whilst it greatly interferes with motor nerves, and to some extent with muscular contraction. Such effects are evidenced by rapid failure of response under stimulation, but recovery after a rest interval. The fall of temperature is much less than after aconitine, and it is not believed that this body will prove at all comparable to aconitine as an antipyretic remedy.

The third alkaloid aconine, though bitter, causes neither numbness nor salivation. It is not merely non-toxic towards the heart, but actually strengthens the ventricular systole and opposes the asequence and inco-ordination which aconitine so actively produces. There is little doubt that both this substance and benzaconine might be of value as therapeutical agencies (if they can be procured in sufficient

quantity) in some conditions of accelerated and irregular heart's action. In addition to this action, aconine (in very large doses) depresses respiration, and so acts upon motor nerves as to suspend their function. It is possible so to graduate the dose as to administer to a frog an amount which, whilst compatible with vigorous circulation, abolishes all motility for four or five days, after which respiratory and voluntary movements begin to develop. A mammal receiving a parallel dose would necessarily die, unless artificial respiration were practised. The curare-like action is, if the dose be smaller, reduced to a recurrent or intermittent response of the muscle to stimulation. Skeletal muscular tissue is unimpaired in action.

Whilst the introduction into aconitine of two additional acetyl groups (as in diacetyl-aconitine) gives rise to a derivative much weaker than, but in general character of effect very similar to, aconitine, the loss of the acetyl group, as in benzaconine, almost entirely abolishes all resemblance to the parent alkaloid. On the other hand, the removal of the benzoyl radicle from benzaconine (aconine remaining) produces a change which is much less striking in character, though it greatly reduces the toxicity and modifies the action occasioned by benzaconine on the circulatory and motor systems.

REFERENCE.—[1] "Brit. Med. Journ.," Oct. 8, 1898.

ALCOHOL.

Zangger,[1] of Zürich, recommends the external application of alcohol in the treatment of **Whitlow, Lymphangitis, Phlegmon**, and incipient **Abscess.**

The following are his directions: "The inflamed part is washed with soap and water—if necessary with ether—dried, covered with some gauze (to prevent the cotton-wool from adhering to the skin), and then a layer of from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. of cotton-wool is bound round the part by means of a gauze bandage. The whole is saturated with a strong solution of alcohol, 90 per cent. Over this bandage, well saturated with the alcohol, but not so that it drips, a cover of gutta-percha paper is fastened by means of a gauze bandage so that it overlaps the bandage by one inch on every side; this gutta-percha paper must have small holes cut in it at intervals of about an inch. These holes are easily made by folding the paper from six to ten-fold and snipping off the edges. This bandage is removed every twelve or twenty-four hours, according to circumstances—the severity of the case, the pain, the fever, the rapidity of evaporation, etc. The same gutta-percha paper can be used two or three times if cut large enough, as the alcohol makes it shrink. It is essential that the bandage should reach an inch or two beyond the

inflamed part and that the gutta-percha paper should itself reach beyond the bandage by an inch, also that holes should be cut in the gutta-percha paper to ensure evaporation."

The author describes his cases in detail, and appears to have obtained exceptionally good results.

REFERENCE.—[1] "Lancet," Jan. 28, 1899.

ANALGESICS.

Prof. Ralph Stockman[1] gives an excellent summary of the action of some of the most recent synthetic analgesics, drawing attention especially to their benefits and attendant risks. Most of them were introduced, not so much in the character of analgesics as in that of antipyretics, but, at the present time, and speaking very generally, their employment to reduce temperature has assumed less importance than their value in reducing pain. This is due largely to the fact that the direct antipyretic treatment of feverish conditions has gone out of fashion, owing to the more specific treatment by means of serum antitoxins, which is at present receiving such a wide trial.

The following are some of the more important members of the group:—

Analgen, although it cannot be considered a very powerful analgesic agent, yet has the advantages of but slight toxicity, of tastelessness, and of easy solubility in acid media, so that, being readily absorbed from the stomach, its action is quickly produced. On account of its tastelessness and comparative harmlessness it is of especial value in the treatment of painful conditions in children. It has proved of value in many diseases, among which are **Spinal Caries** and **Hip-joint Disease.** Its effect is transient, but this, if it be a defect, is easily overcome by a frequent repetition of the dose. It has sometimes succeeded after antipyrine and phenacetin have failed. Its great evil depends on the destructive action it exerts on the red blood corpuscles, resulting in urobilinuria. Although untoward effects such as nausea, vomiting, diarrhœa, tremor, vertigo, and rashes have followed its use, yet, as a matter of experience, these unpleasant accidents rarely occur.

Euphorin is without doubt a powerful analgesic; it is said to have the activity of twice its weight of antipyrine. But like some other powerful analgesics it tends to interfere with the respiratory processes and to weaken the heart's action, and produce cyanosis with collapse. A negative advantage it has in that it does not induce changes in the blood or affect the kidneys. It has proved of especial service in the pain of **Orchitis.** Although its toxicity, in carefully regulated medicinal doses, cannot be called great, yet it always produces extremely profuse perspiration, frequently a subnormal temperature, and occasionally

cyanosis. The great disadvantage of its use depends on the difficulty of predicting what its action will be on different individuals, and it should therefore obviously be given in the first instance in a tentative manner.

Methylene Blue is a distinctly useful analgesic, particularly in **Functional Neuralgias** and in all kinds of **Nervous Headache**. It, however, changes the hæmoglobin of the blood into methæmoglobin, and causes irritation of the stomach, leading to vomiting and diarrhœa, and also of the urinary tract, having caused in different cases albuminuria, retention of urine, strangury, cystitis, and spasmodic contraction of the bladder. In large doses it has caused muscular paresis, loss of sensibility and dyspnœa.

Pyoktanin is not of sufficient therapeutic value to need more than a mere reference.

Agathin is said to be both slow in its action and unreliable in its effect. It has caused vomiting, diarrhœa, insomnia, vertigo, loss of consciousness, and even increase of the pain which it was given to relieve. It is probably not worthy of a place among valued analgesics, both on account of its limited applicability and because of the accidents which have followed its employment.

The *Compounds of Antipyrine*, namely, pyramidon, salipyrin, tolipyrin, tolisall, and ferripyrin, have, as analgesics, merely a weak action of their antipyrine element. They are harmless, but not as a rule sufficiently powerful for the treatment of urgent pain.

Those which are derived from *Salicylic Acid* as well as *Antipyrine*, namely, salipyrin and tolisall, are of use in painful states of rheumatic origin, but otherwise they are comparatively unimportant.

Malakin, being only slightly soluble in the ordinary menstrua, is slow in its action, very much slower than phenacetin, antifebrine, or antipyrine, and is in every way much inferior to them; with the exception, however, that it may be given for a long period of time without disordering digestion. It has been found of distinct service in **Acute Rheumatism.** It has no deleterious action on the blood or kidneys, being indeed practicaily free from risk.

Neurodin, one of the para-amido-phenyl derivatives of aniline, is another remedy which is feeble in its action, but harmless in doses sufficiently large to elicit its analgesic effect. Not only is it weak, however, but it is uncertain, and must be considered greatly inferior to phenacetin and antipyrine.

Lactophenin appears to be more active as a mere **Sedative to the Nervous System** (relieving irritability, restlessness, and depression) than as a pure analgesic. It is comparatively free from risk, although

in medicinal doses it has produced vomiting, coldness of the body surface, cyanosis, and collapse. But its great disadvantage is that it is inconstant in its analgesic effect; it has been known to fail completely in relieving the pain of multiple neuritis and of intercostal neuralgia.

Citrophen has not so far been much used as an analgesic. Its applications are much the same as those of phenacetin, but its attendant risks are greater, while its benefits are much less distinct. It has exerted in medicinal doses a gravely toxic effect on the blood, and has produced serious irritation of the intestine and kidney. It probably ranks very much below phenacetin.

Apolysin closely resembles phenacetin in its effects; it is said to produce analgesia even more vigorously than that remedy, but to be likewise more toxic. As it is much more soluble than phenacetin and the other members of the same group its action is correspondingly more prompt. It has been of especial benefit in **Migraine** in diminishing the violence of the pain, in allaying the cutaneous hyperæsthesia, and in shortening the duration of the attack. It is well tolerated in large doses, continued over long periods of time, without showing any tendency to accumulation or produce intestinal or renal irritation, or indeed any material injurious result. Its toxic effects, which are those of phenacetin but more pronounced, are especially liable to occur if it is given on an empty stomach, or when that organ is producing an excessive amount of acid secretion. It is a remedy which may prove a valuable supplement to the phenacetin-antipyrine-exalgin group.

Phenocoll Hydrochloride is a derivative of phenacetin, and is said to be as powerful an analgesic as it, and, being more soluble, it acts more quickly. Even if this be granted, it cannot be considered so safe a remedial agent. Its special use has been in **Neuralgias** brought on by cold, that is, of rheumatic origin. But in children, and in debilitated adults, more especially in cases of advanced phthisis, it has caused alarming collapse with cyanosis. In other cases it has produced labial herpes, vertigo, and general *malaise*. It is, however, a substance which may take an important place in the future as a means of relieving painful states generally.

The *Salicylate of Phenocoll* or *Salocoll* has no advantage over the hydrochloride of phenocoll, except that advantage which is due to the action of its salicylic acid element. It is said not to cause any gastric irritation, or indeed any untoward effect when given in medicinal doses.

Salophen is probably the best of the recent synthetic analgesics. It was introduced to replace salol, and has instead of its phenol radicle

the acetyl-para-amido-phenyl radicle. Like salol it is not decomposed until it reaches the intestine, so it does not produce any gastric disturbance, as do the salicylates. Its toxicity is very slight, and is apparently due, when given in very large doses, to the salicylic acid it contains, but in medicinal doses it does not even produce the tinnitus and headache characteristic of the action of the salicylates. It has been of benefit in painful states of all sorts, but of special value in the **Neuralgias of Children.** When it is used to relieve the pains of **Influenza** it is necessary to continue its administrations for a few days after the pains have been relieved. It is held, and with considerable reason, to be as effective and as safe as, or safer than, antipyrine and phenacetin, and it is probable that before long it will take rank with these substances.

REFERENCE.—[1] "Brit. Med. Journ.," Oct. 8, 1898.

ANTITOXINS. (See under "Toxins.")

APOCYNUM CANNABINUM.

This remedy has again attracted some attention in the United States, where it is known as the "Vegetable Trocar," and is largely used in the treatment of **Dropsy.** Dr. Dabney,[1] of New Orleans, speaking of its physiological action, says that it is chiefly a **Cardiac Remedy.**

The heart of a dog was slowed down to two beats to one respiration, and even as low as three beats to two respirations. It will thus be seen that it is far more powerful than digitalis. No such results have ever been obtained experimentally from the use of digitalis, for the vagus becomes paralysed before this point is reached. Apocynum strengthens the heart and increases its tone, so that it stops the heart of the frog in systole. In mammals the heart is stopped in diastole, though a massive dose may stop it in systole. Clinically it has been found to regulate in a marked manner the action of the irregular heart, but it *does not* slow the normal heart. It very closely resembles the action of strophanthus, digitalis, adonidin, caffeine, and spartein, but it is the most powerful of the group. Its action on the arteries differs from that of digitalis, as is shown by changes in the blood-pressure. It causes no contraction of the arteries, hence no increase in blood-pressure. It resembles strophanthus rather than digitalis in this respect.

The following are the advantages claimed for apocynum by the author: (1,) The small quantity necessary to produce free diuresis, emesis, or catharsis; (2,) Its pleasant, aromatic taste; (3,) Its tonic properties, which compensate for the depression consequent on free

catharsis ; (4,) Its harmlessness—an overdose being speedily followed by emesis.

With this remedy at our command, he believes paracentesis to be, in most cases unnecessary.

REFERENCE.—[1] "Therap. Gazette," Nov. 15, 1898.

ARGONIN. (See under "Protargol.")

ARSENIC.

The subject of **Medicinal Eruptions** is one which is of considerable interest, not only to dermatologists, but to physicians generally. Cathelineau [1] has recently described at considerable length not only the various forms of rashes which follow the administration of arsenic, but also the circumstances which lead to their production. The article contains nothing absolutely new, but it is convenient to have familiar facts classified and arranged in a tabular form. Arsenical rashes, he points out, may be the result : (1,) Of occupation ; (2,) Of their medicinal use ; or, (3,) Of accidental administration.

(1,) OCCUPATION.—In these cases arsenic acts by contact or by its fumes.

Mines.—The chief are those in which the workmen are daily handling arsenic, or in which they are exposed to its fumes during the treatment of arsenical minerals, such as—mispickel FeSAs, cobaltine CoAsS, kupfernickel NiAs, disomore NiAsS. The powdering of the ore, the withdrawing it from the galleries of the mines, or from the ovens after sublimation of the white arsenic, and the packing in barrels are the most dangerous processes, one half of the workmen employed presenting some eruptive phemomena.

Arsenical Colours.—The various green pigments containing arsenites of copper, such as Scheele's green, Schweinfurth's green, Veronese green, etc., cause eruptions on the skin of the workmen employed.

Coloured Papers.—When arsenical colours are used, some of the workmen have their hands constantly in contact with the arsenical compounds, others inhale the fine particles detached by the brush during the glossing process.

Artificial Leaves and Grasses.—The cloth is covered with a paste of Schweinfurth's green and dried. All who handle the articles are liable to be affected by the arsenic.

Painters.—Arsenical paint is particularly used for protecting wood intended for hot climates from the attacks of insects.

Fuchsine Manufacture.—In the manufacture of aniline colours, arsenic acid is often used for the purpose of oxidising the aniline, and the workmen are in continual contact with arsenic and its fumes.

Leather-dressing.—A paste of yellow sulphide of arsenic and lime is used for clearing the skins.

(2,) MEDICINAL USE.—This may cause toxic symptoms from the use of arsenical pomades or depilatories. A strong preparation is less dangerous than a weak one, as the intensity of the inflammatory reaction interferes with the absorption of the poison. Other common preparations which, taken internally, may give rise to eruptions, are *Fowler's solution*, *Asiatic pills*, *Pearson's solution*, and the water of the Perrière spring at La Bourboule.

(3,) ACCIDENTAL POISONING.—This may occur from water, wine, bread, etc., and sometimes be epidemic in character. In other cases it arises from clothing or wall papers coloured by arsenical pigments. Finally, arsenic may be mistaken for sugar, plaster, or chalk.

Symptoms.—The outbreak of the eruption is generally after the third day; it is usually polymorphic, and there may also be œdema of the face and eyelids, and pruritus.

The following forms of **Eruption** are found :—

(1,) **Erythematous,** chiefly affecting the neck, shoulders, chest, and joints ; as a rule, pruritus is marked.

(2,) **Papular:** Discrete papules of a bright red-brown colour, and the size of a pin-head ; they may be generalised or confluent, and itching is usually present.

(3,) **Urticarial** is less common, and affects the face and neck.

(4,) **Vesicular** is the most frequent of all, and may accompany or follow erythematous rashes ; the arms, forearms, head, and back are the habitual sites. A special variety of the vesicular arsenical eruption is **"Arsenical Zona."**

(5,) **Pustular** resembles discrete smallpox upon the trunk and proximal parts of the limbs, genital organs, or the parts of the body in actual contact with arsenical compounds. The pustules may be the starting point for ulcerations.

(6,) **Ulceration** follows sometimes a papular or pustular stage. The head, the limbs, the scrotum, and the tongue or lips are usually the parts affected.

(7,) **Petechial** and bullous forms of eruption are occasionally found.

(8,) **Melanosis.**—Pigmentation is produced in chronic forms of poisoning by repeated doses of arsenic, and usually appears in from three weeks to three months. It commences by a yellowish-brown colouration on the face, the trunk, or the limbs. It may affect large surfaces, but usually forms rounded lenticular spots, some of which may coalesce. If the use of arsenic is continued, the colour becomes

a deeper brown, bronze, or slate colour, which is most intense in the axillæ, popliteal spaces, labia majora, and round the anus. The palms and soles may be free from pigmentation. Young subjects appear more predisposed to pigmentation than adults or old people, and women rather than men. The pigmentation may remain three years after the cessation of the administration of arsenic.

(9,) **Kerato-dermia** is another result of the prolonged use of arsenic. It is limited to the palms and soles, and varies from a simple epidermic exfoliation to thick, warty, or smooth patches; the lesions may be transient or persistent, but are always symmetrical. In a few cases the warty patches may become epitheliomatous.

The dose of arsenic required to produce eruptions varies with the tolerance of individual patients; after single large doses (*e.g.*, attempted suicide) symptoms may appear as early as the second or fourth day, and melanosis after the tenth day. When the absorption of arsenic ceases the eruptions disappear, as the poison is slowly eliminated from the body.

REFERENCES.—[1] "Arch. gèn. de méd.," Aug., 1898; "Med. Chron.," Oct., 1898.

BILE.

Prof. T. R. Fraser,[1] of Edinburgh, has already shown that the bile of several animals possesses antidotal properties against serpents' venom and against the toxins of such diseases as diphtheria and tetanus, and that the bile of venomous, or more correctly of nocuous serpents is especially powerful as an antidote against the venom of serpents. The experiments have been extended, with the result that further proof of these propositions has been obtained.

The most important results are that the bile of nocuous or venomous serpents is the most powerful antidote to venom, and is closely followed in efficiency by the bile of innocuous serpents, while the bile of animals having no venom-producing glands—as man and the ox, pig, and rabbit—while definitely antidotal, is less so than the bile of innocuous serpents, and much less so than the bile of nocuous or venomous serpents. It is remarkable to find that the bile of one species of venomous serpent may actually be a more powerful antidote against the venom of another species than is the bile produced by this species, and that there is no direct correspondence between the toxic activity of the venom produced by a serpent and the antidotal power of the bile of that serpent.

As disease toxins and venoms are excreted from the blood into the intestinal canal, the antidotal bile, which they must there be brought into contact with, constitutes a potent means of defence of the body by

rendering the toxins and venoms inert before they can be absorbed from the intestines into the blood. The therapeutic importance of remedies that are able to increase the hepatic secretion is thus indicated. Although not yet experimentally demonstrated, it may be inferred, almost as a corollary from the above, that poisons generated in the intestinal canal will also be rendered inert by bile. Traditional belief is clearly in favour of the view that certain forms of disordered health are produced by deterioration in the functions of the liver. Many of these disorders are now referred to auto-intoxication, and the advantage of cholagogue treatment thus finds an intelligible explanation.

While all the biles examined are antidotal against both toxins and venoms, it is shown that the bile produced by an animal in whose body venom is present is much more antidotal against venoms than against toxins. It is thus indicated that a special antidotal constituent, additional to the ordinary constituents, is present in the bile of an animal whose body contains a poison of the nature of the venoms or toxins. In all probability this constituent is antitoxin or antivenene, which has been eliminated from the blood into the bile, and which in an infective disease would thus reinforce the antidotal qualities common to the normal bile of all animals. This, no doubt, is the explanation of the favourable results which have been obtained by Koch and others in the treatment of rinderpest with the bile of animals which have been infected with the micro-organisms, and consequently with the toxin, of that disease.

REFERENCES.—[1] "Proceed. Roy. Soc. of Edinburgh," xxi, 1897, p. 457–565 ; "Brit. Med. Journ.," Sept. 4, 1897 ; Ibid., Sept. 3, 1898.

CANTHARIDES.

Salinger[1] finds that in **Chronic Parenchymatous Nephritis** cantharides is not only a valuable diuretic, but exerts distinctly curative powers. It is essential that it should be given only in small doses so as not to produce irritation.

The author records very fully two cases in which excellent results were obtained. In the first case the amount of urine rose in the course of a fortnight from 10 ounces to 132 ounces per diem. In the other case it rose from 10 ounces to 125 ounces, diuresis setting in on the third day after commencing the drug, and reaching its maximum on the tenth day.

The author gives 2 minims of the tincture of cantharides every four hours, with acetate of iron and ammonia.

REFERENCE.—[1] "Therap. Gazette," May 15, 1899.

CARBON MONOXIDE AMYL NITRITE.

Winkler[1] suggests the use of this substance as a substitute for nitrite of amyl. Looking upon the injurious influence of amyl nitrite on the condition of the heart and lung, as possibly connected with the formation of methæmoglobin, and knowing that carbon monoxide prevents the causes leading to the production of methæmoglobin from acting, he made experiments with amyl nitrite containing ·005 per cent. of carbon monoxide. He finds this acts somewhat differently to ordinary amyl nitrite, it causes some flushing, but does not lower the tension or weaken the heart as much as ordinary amyl nitrite. The amyl nitrite containing carbon monoxide does not lead to the formation of methæmoglobin with the blood until a large quantity has been taken, and the lethal dose is much larger than that of ordinary amyl nitrite. After large doses, however, the spectrum gives evidence of carbon monoxide in the blood.

The author inhaled about 20 drops, and found that it caused some flushing and fall in tension, but both, and especially the latter, were less marked than when he inhaled pure amyl nitrite.

REFERENCES.—[1] "Klin. Med.," vol. xxxv, p. 213; Ibid., vol. xxxvi, p. 30; "Med. Chron.," Aug., 1899.

CASSARIPE.

S. D. Risley[1] has had his attention called by H. B. Chandler of Boston, to Cassaripe, the inspissated juice of the *Cassava*, which forms the basis of the West India preservative pepper pot. The cassava belongs to the *Euphorbiaceæ* or spurge family, and is cultivated in tropical America and the West Indies for the large fleshy root, which contains an abundance of farina. In preparing cassava bread a milky poisonous juice exudes. This juice is concentrated to a semisolid known as "cassaripe," heat destroying its poisonous properties. It is a powerful antiseptic, a solution poured over meat preserving it indefinitely. Risley has used it as a 10 per cent. ointment in cases of **Corneal Ulcer** and **Infectious Diseases of the Eye,** but as it causes no irritation, sees no objection to its being employed in much stronger preparations. The ointment was applied freely between the lids, and the eye rubbed so as to distribute it thoroughly into the retrotarsal folds, and in the corneal cases a protecting bandage was applied. With hospital patients this was repeated three times daily; with out-patients it was done morning and evening. No other treatment was employed except that atropine was used, and a wash of boric acid was applied. In a few minutes after the application of the ointment in new cases the discomfort was much diminished, and the improvement was usually rapid as compared with other forms of treatment. In

a case of **Ophthalmia Neonatorum** the eye was thoroughly cleansed, the ointment of cassaripe applied, and a supply given to be used three times daily at home after the usual wash. In two days the purulent discharge had entirely ceased. The author thinks that cassaripe is a powerful vegetable antiseptic, which promises to be a useful addition to our means of treating infectious forms of ocular disease.

REFERENCES.—[1] "Phil. Med. Journ.," Oct. 29, 1898; "Brit. Med. Journ," Nov. 26, 1898.

CHOLINE and NEURINE.

The cerebro-spinal fluid removed from cases of brain atrophy, particularly from cases of general paralysis of the insane, produces when injected into the circulation of anæsthetised animals (dogs, cats, rabbits), a fall of arterial blood pressure, with little or no effect on respiration. This pathological fluid is richer in proteid matter than the normal fluid, and among the proteids, nucleo-proteid is present. The fall of blood pressure is, however, due not to proteid, nor to inorganic constituents, but to an organic substance which is soluble in alcohol. This substance is precipitable by phospho-tungstic acid, and by chemical methods was identified as choline. The crystals of the platinum double salt, which when crystallised from 15 per cent. alcohol, are characteristic octahedra, form the most convenient test for the separation and identification of this base.

The nucleo-proteid and choline doubtless originate from the disintegration of the brain tissue, and their presence indicates that possibly some of the symptoms of general paralysis may be due to auto-intoxication; these substances pass into the blood, for the cerebro-spinal fluid functions as the lymph of the central nervous system.

Dr. Mott,[1] the Pathologist to the London County Asylums, and Dr. Halliburton, Professor of Physiology in King's College, London, have identified choline in the blood, removed by venesection during the convulsive seizures which form a prominent symptom in the disease, and have investigated its action.

Choline.—The doses employed were from 1 to 10 c.cm. of a 0·2 per cent. solution, either of choline or of its hydrochloride. These were injected intravenously. The fall of blood pressure is in some measure due to its action on the heart, but is mainly produced by dilatation of the peripheral vessels, especially in the intestinal area. This was demonstrated by the use of an intestinal oncometer. The limbs and kidneys are somewhat lessened in volume; this appears to be a passive effect, secondary to the fall in general blood pressure. The drug causes a marked contraction of the spleen, followed by an

exaggeration of the normal curves, due to the alternate systole and diastole of that organ.

The action on the splanchnic vessels is due to the direct action of the base on the neuro-muscular mechanism of the blood-vessels themselves; for after the influence of the central nervous system has been removed by section of the spinal cord, or of the splanchnic nerves, choline still causes the typical fall of blood pressure. The action of peripheral ganglia was in other experiments excluded by previous intravenous injection of a solution of nicotine.

Section of the vagi produces no effect on the results of injecting choline, and there is no evidence of any direct action of the base on the cerebral vessels. Choline has little or no action on nerve trunks, as tested by their electrical response to stimulation. It has no effect on respiration.

The effect of choline soon passes off, and the blood pressure returns to its previous level. This is due partly to the great dilution of the substance injected by the whole volume of the blood, and may be partly due to the excretion of the alkaloid, or to its being broken up into simpler substances by metabolic processes.

If the animal has been given a hypodermic injection of morphine and atropine prior to the administration of the ether or A.C.E. mixture, the effect produced by choline is a rise of arterial pressure, accompanied by a rise of the lever of the intestinal oncometer. This shows how the action of one poison may be modified by the presence of another. It has some bearing on general paralysis, for the arterial tension in that disease is usually high, not low, as it would be if choline were the only toxic agent at work.

Neurine, an alkaloid closely allied to Choline, is not present in the fluid. Its toxic action is much more powerful, and its effects differ considerably from those of choline.

The doses employed varied from 1 to 5 c.cm. of a 0·1 per cent. solution. These were injected intravenously.

Neurine produces a fall of arterial pressure, followed by a marked rise, and a subsequent fall to the normal level. The effect of neurine on the heart of both frog and mammal is much more marked than is the case with choline; in the case of both choline and neurine the action on the frog's heart is antagonised by atropine.

The slowing and weakening of the heart appear to account for the preliminary fall of blood pressure; in some cases this is apparently combined with a direct dilating influence on the peripheral vessels. The rise of blood pressure which occurs after the fall is due to the constriction of the peripheral vessels, evidence of which we have

obtained by the use of oncometers for intestine, spleen, and kidney. After the influence of the central nervous system has been removed by section of the spinal chord, or of the splanchnic nerves, neurine still produces its typical effects. After, however, the action of peripheral ganglia has been cut off by the use of nicotine, neurine produces only a fall of blood pressure. It appears that the constriction of the vessels is due to the action of the drug on the ganglia; in this it would agree with nicotine, coniine, and piperidine. Section of the vagi produces no influence on the results of injecting neurine. In animals anæsthetised with morphine and atropine, injection of neurine causes only a rise of blood pressure, which is accompanied with constriction of peripheral vessels.

Neurine produces no direct results, so far as we could ascertain, on the cerebral blood vessels. It is intensely toxic to nerve trunks. It produces a marked effect on the respiration. This is first greatly increased; but with each successive dose the effect is less, and ultimately the respiration becomes weaker and ceases altogether. The animal can be kept alive by artificial respiration.

The exacerbation of respiratory movements will not account for the rise of arterial pressure; the two events are usually not synchronous, and an intense rise of arterial pressure—due, as previously stated, to contraction of peripheral blood vessels—may occur when there is little or no increase of respiratory activity or during artificial respiration.

REFERENCES.—[1] Paper read before the Royal Society, April 20, 1899; "Brit. Med. Journ.," May 6, 1898.

CILIARY BODY.

Ciliary Body hardly, as yet, comes within the range of therapeutical agents, but a preparation called *Extractum corporis ciliaris liquidum*, made from the ciliary body of the ox, with the addition of a little resorcin as a preservative, is recommended by L. Dor[1] in certain forms of **Sympathetic Ophthalmia** in which the aqueous humour is clouded with albuminous and fibrinous material from defective filtering action on the part of the ciliary body, while at the same time chemical changes take place in the vitreous body whereby it becomes softened, and fibrinous masses are attached to the crystalline lens and the iris. The extract is used both by instillation and by subconjunctival injection. For instillation, a drop of the solution may be used every two hours.

REFERENCE.—[1] "Klin. therap. Woch.," May 29, 1898.

COTARNINE HYDROCHLORATE.

Cotarnine is a fractional product by oxidation of narcotine an alkaloid of opium. Narcotine can be separated into an acid, "opianic acid," and the base "cotarnine," according to the following formula :—

$$\underset{\text{Narcotine.}}{C_{22}H_{23}NO_7} + O + H_2O = \underset{\text{Opianic Acid.}}{C_{10}H_{10}O_5} + \underset{\text{Cotarnine.}}{C_{12}H_{13}NO_3H_2O}$$

The hydrochlorate of cotarnine is a micro-crystalline yellow powder, with an intensely bitter taste, soluble in water, the solution darkening on exposure to light. Martin Freund, who discovered the hydrochlorate and gave it the name of stypticin, states that it is allied to hydrastinine, being chemically hydrastinine in which the methoxyl group O CH_3 displaces an atom of hydrogen. (See "Hydrastine.")

Göttschalk[1] tried it therapeutically, and Falk[2] experimented on its physiological action, and since then Rousse, Walton, and Marfori have also examined it from a pharmacological standpoint. All observers agree that stypticin causes a fatal termination by its paralysing effect on the respiratory centre, but whilst Falk and Marfori state that a weakened heart action is produced by cotarnine, secondary to its influence on respiration, Rousse and Walton declare that it has a tonic action on the circulatory system comparable to that of digitalis.

H. J. Boldt[3] has used cotarnine in various forms of **Uterine Disease** including the following :—

(1,) **Prolonged and Profuse Menstruation** in unmarried anæmic subjects, without any discernible change in the pelvic organs—nine cases: The patients were put upon doses of 1·5 grains every two hours for four doses at the first sign of the flow ; there was some diminution of the quantity of blood lost, but no marked amelioration of the dysmenorrhœa in cases showing this symptom.

(2,) **Fibromyomata** causing meno- and metro-rrhagia—four cases : In only one instance was the flow somewhat diminished, with a decrease of pain at the time of menstruation ; in the others the effect was absolutely negative, despite the administration of 1·5 grains of the drug subcutaneously in the lumbar region.

(3,) **Inoperable Cancer**—five cases : The effect was negative in each instance.

(4,) **Para- and Peri-metritis** after abortion—three cases : In one case 1·5 grains subcutaneously gave marked relief after internal administration had failed. Of the other two patients, one was improved, the other cured.

(5,) **Hæmorrhage due to Pelvic Inflammation** after full term delivery —two cases : In both cases the condition was promptly ameliorated

and hæmorrhage ceased on the third and on the fifth day ; the patients had been bleeding ten and fifteen days respectively.

(6,) **Menorrhagia** in multipara without anæmia, and without changed endometrium, but with moderate enlargement of the ovaries—eight cases : In all cases but one stypticin caused improvement.

(7,) **Irregular Bleeding after the Puerperium,** without retention of decidua or placenta, these having previously been removed with the curette—twelve cases : In all these cases the remedy had a most astonishing effect, rapidly producing an arrest of the hæmorrhage.

(8,) The same, with retention of small areas of placental tissue—two cases : In these cases the drug was given in $\frac{1}{2}$-grain doses, at intervals of twelve hours, four doses, without producing any marked difference. Both eventually consented to curetting, when prompt relief followed.

(9,) **Hæmorrhagic Endometritis**—eight cases : In these the results from stypticin were not marked in any case till after an abrasio uteri had been done, but in seven cases stypticin, after the curetting, proved very useful. In the other case no effect was produced.

(10,) **Fungous Endometritis**—two cases : The effect was absolutely negative—subsequent cure by curetting and local treatment.

(11,) **Retroflexion with Chronic Endometritis**—two cases : These cases were observed for two months to try the effect of the remedy ; there was but slight improvement as to the duration of the flow and the quantity of blood lost ; the customary treatment was then adopted, with prompt relief.

(12,) **Chronic Metritis and Endometritis**—seven cases : In one instance there was moderate improvement ; in one case marked improvement ; in the remainder the effect was *nil.*

(13,) **Irregular Bleeding** in multipara at the menopause—five cases : In these cases the drug proved very satisfactory, giving an almost immediate good result in each case.

(14,) The same without any discoverable cause—one case : In this case the menstrual period had begun to lengthen in duration from two or three days till it reached two weeks. Curetting had been performed with but temporary benefit. The patient was put on stypticin, which had some beneficial effect on the third day. She was kept on the drug three-and-a-half months, and became entirely cured. Four menstrual periods have since passed normally. In this case fluid extract of hydrastis had no effect.

(15,) **Subinvolution,** present six weeks to four months after delivery —eleven cases : In cases of post-puerperal bleeding due to subinvolution the value of stypticin was clearly marked. In only one instance

was the result unappreciable ; with this exception the drug fulfilled all that could be desired or expected.

(16,) **Perimetritis and Parametritis** due to traumatism—three cases: In bleeding, the result in one instance of dilatation of the cervix, in the others due to intra-uterine applications, the stypticin treatment was successful ; the flow of blood began to diminish twenty-four to thirty-six hours after commencing with the drug, and was arrested completely within three to four days.

(17,) **Bleeding during Pregnancy**—three cases : In these cases of slight and irregular losses of blood during pregnancy, stypticin stopped the hæmorrhages.

The author finds that stypticin is almost a specific in certain forms of uterine hæmorrhage. He gave it in doses of ½ gr. to 5 grs., at first by the mouth, but later almost entirely subcutaneously. He found no unpleasant symptoms produced even by such large doses as 4½ grs. He observed no hypnotic effect, and doubts its supposed oxytocic properties. He considers it a "hæmostatic *par excellence* if the proper indication has been selected for the employment of the drug." If a quick result is to be achieved, an injection into the glutei of 20 minims of a 10 per cent. solution in sterile water, with the customary antiseptic precautions, may be given and repeated in from eight to twelve hours.

REFERENCES.—[1] "Therap. Monatsh," Dec., 1895 ; [2] Ibid., Jan., 1896 ; [3] "Med. News," April 8, 1899 ; "Med. Chron.," July, 1899.

DUBOISINE. (See "Hyoscine.")

FILIX MAS.

Boehm,[1] of Leipzig, finds that the value of the oleoresin depends on the presence of aspidin, as well as that of filicic acid. Of eleven preparations examined, six contained aspidin in large proportion (2 to 3 per cent.), while filicic acid was absent ; four contained filicic acid, but no aspidin ; and one contained small quantities of both. These results apparently indicate that a high content of aspidin excludes the presence of filicic acid, and *vice versâ*. Boehm concludes that an oleoresin containing principally aspidin is preferable to one rich in filicic acid, and speculates on the circumstances that may cause the one or the other constituent to predominate. The possibility that in the finished extract, filicic acid is converted into aspidin, or *vice versâ*, was disproved by experiment. Neither can the age of the drug alone be the cause, as each of the eleven specimens examined was prepared from fresh root, and yet a great difference was found in the composition. The time of year of collecting the root has also

been proved to have little influence. On the other hand, everything points to the habitat and conditions of growth, as also the many varieties of *Aspidium filix mas*, as the principal influence in the formation of aspidin or filicic acid.

REFERENCES.—[1] "Bull. Pharm.," vol. xii., No. 11; "Therap. Gazette," March 15, 1899.

FORMALIN.

Dr. William Mitchell,[1] of Bradford, recommends the local application of formalin in the treatment and removal of **Inoperable Malignant Growths.** He gives a detailed account of the removal from the face of a sarcoma as large as the fist.

Bearing in mind the great power of penetration and coagulation possessed by formalin, and the rapidity of its action in this respect on dead tissues, he determined to try its effect on the living. After applying a solution of caoutchouc to protect the surrounding skin, he soaked a small pad of absorbent cotton wool with a solution of formalin containing 20 per cent. of formic aldehyde, and applied this to the raw surface, then covered it with guttapercha tissue, and held it in place with a bandage.

Not only was the hæmorrhage entirely stopped, but in twenty-four hours there was produced a hardening and necrosis of the tissues, extending nearly a quarter of an inch from the surface.

He then scooped out with a scalpel and sharp spoon some of the necrosed part, and filled up the cavity with cotton wool saturated with the formalin solution as before. Daily repeating this, he was able in a short time to tunnel right into the centre of the tumour, and eventually to remove it completely, notwithstanding that it was highly vascular, and during the process there has not practically been one drop of blood lost.

The formalin seems to exert its influence equally in all directions, and to be capable of penetrating to almost any depth if constantly applied. He cut out a solid piece an inch in thickness at one time, although usually he contented himself with less. The pain was occasionally severe, but was held in check by small doses of nepenthe.

There was occasionally considerable œdema of the lower eyelids and lips, and on one occasion of the cellular tissues of the neck. When the application of formalin was suspended for a few days, a line of demarcation formed with exactly the appearances seen in dry senile gangrene of the extremities.

The author considers the points in favour of this method are as follows :—

(1,) It is simple in the extreme, requiring no special apparatus, and can be applied without an anæsthetic.

(2,) It produces no shock.

(3,) It does not, like electrolysis, set up a diffuse suppurative process, being not only aseptic, but powerfully antiseptic.

(4,) It is bloodless, and can be applied to very vascular growths, as this case shows.

(5,) It has very much greater penetrating power, and hence effects a more rapid removal than the usual escharotics. Its application does not like those give rise to a disintegrative or caustic process, with the resulting discharge, but is what might be termed a necropoietic process, with no discharge whatever.

(6,) As there is no discharge scarcely any dressing material is required, and an economy is thus effected.

(7,) During the paring away of the necrosed parts the macroscopic limits of such a tumour can be easily seen on the dry clean-cut surfaces, and an indication is thus given as to the direction in which it is necessary to proceed further. The pieces removed can be subjected to microscopic examination for the same purpose.

(8,) Above all, the process appears to be efficient and safe if care is taken.

The drawbacks are :—

(1,) The pain, which is at times pretty severe, but can of course be relieved by an anodyne.

(2,) The œdema, which is always annoying, and might if extending to the glottis be fatal.

The systemic absorption of the formalin is apt to produce an annoying general urticaria, thus showing its relationship to formic acid. There is at the same time a slight rise of temperature. The urticarial irritation can be subdued by carbolic acid lotion

J. D. McFeely,[2] of Dublin, in an inoperable case of **Epithelioma** of the larynx and neck used formalin hypodermically, injecting it into the tumour. He arrives at the following conclusions :—

(1,) Up to ½ a drachm of pure formalin can be injected into the body without producing toxic symptoms.

(2,) Although a powerful styptic, it does not seem so liable as other styptics to produce clotting or embolism.

(3,) It is probably as safe to use formalin undiluted as diluted with water.

(4,) When used undiluted it seems to produce an anæsthetic effect more quickly.

(5,) Unlike most other powerful antiseptics or irritants, it does not

stimulate, but retards cell multiplication or growth in malignant tumours.

The author thinks that formalin, being such a powerful antiseptic and exercising such a destructive influence on all low forms of organic life, not only palliative but also curative effects may reasonably be expected to follow its judicious application.

REFERENCES.—[1] "Brit. Med. Journ.," Feb. 11, 1899; [2] Ibid., July 29, 1899.

FORMIC ALDEHYDE.

Murrell,[1] working with Blaxall in the Bacteriological Laboratory of the Westminster Hospital, finds that even a weak solution of formic aldehyde, such as 6 per cent., exerts a very marked retarding and inhibitive influence on the growth of tubercle bacilli inoculated on to favourable culture media, and that this influence prolonged over forty-eight hours entirely prevents the growth and future development of the bacilli.

The author states that the clinical results of the formic aldehyde treatment are quite in accord with the results of the bacteriological observations. A 6 per cent. solution was as a rule employed, but this was increased or decreased according to the idiosyncrasy of the patient. In most cases the drug was inhaled either once or twice a day, compressed air by a simple mechanical arrangement being made to bubble through the solution. This gave the best results. In other cases, in hospital practice especially, the "bib" method was employed.

The drug in many cases caused irritation at the back of the throat, and sometimes induced violent paroxysms of cough. Twenty cases of **Phthisis** were treated by formic aldehyde, and in six of them the results were inconclusive, either because the patient was lost sight of, or because other methods were resorted to in addition. For example, in three cases injections of Tuberculin R. were given, and these had to be discarded. In the remaining fourteen cases nothing but the formic aldehyde was administered, with the exception of an occasional pill of $\frac{1}{60}$ grain of picrotoxin to check the night-sweating. Of the fourteen cases, twelve were much benefited, whilst two only slightly improved. Both the unsuccessful cases were men, and both presented the physical signs of cavities, or of extensive breaking down on both sides. Of the twelve successful cases, all of which were much improved, five were men and seven were women. Of the five men three had cavities at both apices, and the other two had marked signs of consolidation at the left apex. Of the seven women three had breaking down of both lungs, and four had consolidation of one lung only. One man and one woman had, in addition to the lung symp-

toms, tuberculous ulceration of the larynx. Some of these patients had previously had inhalations of oil of cinnamon or oil of peppermint without benefit. A detailed account is given of a few typical instances.

Since the publication of the paper further observations have been made at the Westminster Hospital, and good results have been obtained not only in phthisis, but in **Pleurisy** and **Empyema** of tubercular origin. The essential oils have been found to be of very little value in the treatment of phthisis.

REFERENCE.—[1] "Brit. Med. Journ.," Jan. 28, 1899; "Med. Brief," May, 1899.

HEROIN.

Strube[1] states that heroin (diacetate of morphine) has been used extensively in the Berlin University Clinic, and that the results have been satisfactory. Experiments on rabbits, dogs and cats show that heroin is a narcotic. Large quantities cause tetanic convulsions very similar to those seen in morphine poisoning. Small doses have a powerful effect on respiration; the narcotic influence is less marked. It is more certain in its action than codeine. The experiments on animals indicated the therapeutical value of the drug. Cases of dyspnœa from various causes, and irritable cough, were successfully treated by heroin. Inflammatory conditions of lungs and air passages, in which the cough and dyspnœa were due to excessive secretion, appeared to be relieved by this drug. Cases of **Phthisis** were considerably benefited by a prolonged course of heroin. Bronchial asthma was also treated.

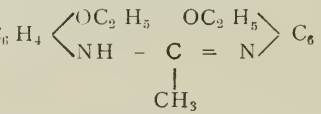
The drug was administered in doses of 0·005 gramme in the form of pills; a single dose never exceeded 0·01 gramme, and the daily amount reached 0·025 gramme. It was also given in powders of 0·005 gramme, with sugar.

Heroin is a fine white powder, slightly bitter in taste. It is not very soluble in water, but by the addition of a few drops of acetic acid it is readily dissolved. Oxylate of heroin has been manufactured, which is very soluble in water. With regard to the action of the drug, clinical experience is in harmony with physiological experiment. A dose of 0·005 to 0·01 gramme causes a diminution in the frequency of respiration, and a marked alleviation of the cough; slight drowsiness is also produced. The drug does not relieve pain. In conclusion, the author states that heroin can replace morphine and codeine in all cases of irritable cough without producing unpleasant narcotic effects.

REFERENCES.—[1] "Berlin. klin. Woch.," 1898, No. xlv; "Brit. Med. Journ.," April 15, 1899.

HOLOCAINE.

C. R. Marshall gives a useful summary of our knowledge of the action of this local anæsthetic. Introduced by Tâuber, holocaine is a condensation product of phenacetin and *p*. phenitidin. Its chemical name is *p*. diethoxy-ethenyl-diphenylamidine, and its formula—



The free base is almost insoluble in cold water, but many of its salts are soluble : the hydrochloride, the compound used in practice, to the extent of nearly 2·5 per cent. This salt is a white crystalline body, and is very stable. Its solutions, however, are decomposed by alkalies, the free base being precipitated, and this is said to occur when a solution is boiled in a glass vessel. In this case the small amount of alkali obtained from the glass is sufficient to decompose part of the salt and cause a turbidity. If boiled in porcelain vessels, however, no turbidity appears, and this method of sterilisation was originally recommended. It is generally accepted that no sterilisation is needed. Solutions were said to remain unchanged even when exposed to the air for two months, but more recently Chevalier[1] has stated that their local-anæsthetic property is lost. Even after fifteen days the diminution is appreciable. He consequently recommends that solutions be used fresh.

Dropped into the eye, a 1 per cent. solution—the strength usually used—causes a slight burning sensation, which is quickly followed by anæsthesia, first to touch, then to chemical substances and heat. The anæsthesia commences in fifteen seconds to one minute, is well marked in two to three minutes, and lasts five to fifteen minutes. Even after the anæsthesia has disappeared, a certain amount of analgesia persists. By repeated instillation a more prolonged anæsthesia can be obtained. Thus, Loewenstamm,[2] by a second application of 4 drops of a 1 per cent. solution at the end of five minutes, prolonged the anæsthesia to nineteen minutes, and by a third application at the end of the second five minutes, to, on an average, thirty minutes.

After the instillation there is no alteration in the pupil (Hirschberg noticed contraction), intra-ocular tension or accommodation, no ischæmia of the conjunctiva, and no diminution in the lachrymal secretion or drying of the cornea. Bock,[3] however, quotes the case of a woman of seventy-one with chronic conjunctival trouble, in whom instillation of a rather large quantity produced dryness and shrivelling of the conjunctiva and cornea, followed by ulceration.

Other advantages of holocaine compared with cocaine are its bactericidal power, its greater diffusibility, and its activity in the presence of conjunctival inflammations. A disadvantage is its greater toxicity.

As regards its antiseptic action, Hinz and Schlösser[4] found that a ½ per cent. solution prevented the development of bacilli, and that a 1 per cent. solution killed paramæcia. More recently, Randolph[5] has investigated the effect of this substance on micrococcus epidermidis albus and staphylococcus pyogenes aureus. His experiments show that a 1 per cent. solution effectually prevents the development of these organisms—which a ½ per cent. solution does not do—but that it is not powerfully bactericidal. He concludes, however, "that a solution of holocaine of the strength employed in ophthalmic practice possesses distinct germicidal properties, a fact which it is evident enhances the value of this product."

Gires experimented on the diffusibility of holocaine, but the diffusibility obtained by him is denied by Chevalier. Sueguirow found this substance to increase the rapidity of diffusion of fluids from the conjunctival sac, and he recommends its use, instead of cocaine, in combination with atropine or eserine. Berger, on the other hand, does not think it favours the absorption of myotics.

The toxicity of holocaine, as compared with cocaine, is given by Hinz and Schlösser as five to one. The minimum lethal dose, according to these observers, for a rabbit weighing 1,500 g. is: Holocaine, ·01 g.; cocaine, ·05 g.; eucaine, ·075 g. According to Joanin (quoted by Chevalier) its toxicity is only slightly greater than that of cocaine.

Pharmacologically, holocaine belongs to the tetanising group of substances. The convulsions appear in the anterior part of the body and gradually extend until general tetanus occurs. If section of the spinal cord be done the convulsions are limited to the anterior part of the body; the parts innervated by the cord beyond the point of section remain passive. The action, therefore, appears to be mainly a cerebral one. Death results from respiratory failure.

In many of the clinical communications a direct comparison has been instituted with cocaine. Gutmann,[6] in a case of squint, used cocaine for one eye and holocaine for the other. The latter he found the most effective. In another case the two compounds were compared on the same eye on two successive occasions.

Three drops of 2 per cent. cocaine produced anæsthesia in two and a half minutes, which lasted three and a quarter minutes; the same amount of 1 per cent. holocaine solution produced anæsthesia in one minute, and it lasted nine minutes. Hotz, on the contrary, found a

2 per cent. solution of cocaine more efficient than 1 per cent. holocaine. In two cases of corneal ulcer which required the application of the electric cautery holocaine and cocaine were successively used. The patients were kept unaware of the change. With holocaine the cauterisation was decidedly painful; with cocaine no pain was felt at all. In another case treated by hypodermic injections of mercury holocaine almost entirely failed to relieve the subsequent pain, although this was readily controlled by cocaine. Chevalier states that his patients noticed no difference between the anæsthesia of cocaine and holocaine. This surgeon used holocaine in forty-two operations of various kinds, both by simple instillation (4 to 5 drops 2 per cent. solution while preparing for the operation and 3 to 4 drops just before commencing), and hypodermic injection ($\frac{1}{2}$ to 1 c.c. 1 per cent. solution), and found no ill-effects from its use. He thinks, however, that hypodermic administration should not be used for large operations outside ophthalmology. Natanson also found no cases in which holocaine could not replace cocaine. Most observers limit its use to the simpler operations in ophthalmology and its application to the method of instillation. By a few it is even deprecated altogether. Argyll Robertson believes that it is inferior to cocaine; but it is possible, as Hinshelwood suggested, that a bad solution was used.

Lagrange and Cosse, as the result of observations on seventy cases, find that: (1,) Holocaine in 1 per cent. solution is particularly useful when the conjunctiva is inflamed; (2,) In this strength it is the "medicament of choice" in the operations of strabismus, chalazion, pterygion, and extraction of foreign bodies from the conjunctiva and cornea; (3,) Holocaine ($\frac{1}{2}$ per cent.) mixed with cocaine (1 per cent.) is suitable for iridectomies and cataract extractions without special indications. Such a mixture is said not to produce any diminution of tension; (4,) Cocaine (2 to 3 per cent.) is the "anæsthetic of choice" for operations in which it is desirable to reduce intraocular tension.

Windemann and Nelson Black[7] experimented with this drug on their own conjunctivæ and found that anæsthesia was produced in fifteen seconds with 2 or 3 drops of a 1 per cent. solution, lasting ten minutes and upwards; the application was attended by slight smarting, lasting for about thirty seconds, but no more than from a similar application of cocaine, followed by a sense of coldness and slight moisture, which lasted for several hours. The lids were squeezed slightly at first, due probably to an irritation of the sympathetic, and an increased hyperæmia of the conjunctiva was always observed, lasting from one-half to one hour. The cornea remains moist, and does not desiccate. No diminution of tension was observed

to have taken place ; no action on the pupil or accommodation was noted in any of the cases. Anæsthesia lasted from twelve to fifteen minutes.

Details of thirty ophthalmic cases where holocaine was used are given, and the results obtained were satisfactory.

The advantages claimed for holocaine are its non-toxic action when used as a local anæsthetic, the stability and bactericidal quality of its solutions, the rapidity and completeness with which it produces anæsthesia, the length of time the anæsthesia lasts, the non-dilatation of the pupil making it especially useful before applying irritating applications, as no blurring of vision is complained of afterwards, and the ready absorption of the drug enabling deeper operations to be performed.

The drug is used one-fifth weaker than cocaine, and its price is proportionately cheaper.

The only toxic effects observed were in its use hypodermically, when it produced clonic spasms.

REFERENCES.—[1] "Bull. gén. de thérap.," Oct., 1897 ; [2] "Therap. Monatsh," May, 1897 ; [3] "Centralbl. f. Augenheit," Sept., 1897 ; [4] "Klin. Monatsbl. f. Augenheilk.," 1897 ; [5] "Johns Hopkins Hosp. Bull.," July, 1898 ; [6] "Deut. med. Woch.," 165, 1897 ; [7] "Ophthal. Rec.," Oct., 1897 ; see also "Med. Annual," 1899, p. 40

HYDRASTINE HYDROCHLORATE.

Dr. C. D. F. Phillips and Dr. M. S. Pembry[1] have published a valuable paper on the pharmacological action of this useful remedy.

Hydrastis canadensis, yellow root or golden seal, is a small herbaceous perennial, indigenous to most parts of the United States and Canada ; it belongs to the *Ranunculaceæ*. In the rhizome of the plant are contained the following active principles : Hydrastine, berberine, and canadine ; in addition to sugar, albumin, and extractives, there is a resin and a small quantity of an ethereal oil. Hydrastine is a derivative of isoquinoline, and its formula is, according to Freund and Will, $C_{21}H_{21}NO_6$. It was first isolated by Durand in 1851. In these experiments pure hydrochlorate of hydrastine was used on account of its solubility in water. A few experiments were made with pure hydrastine and with the liquid extract of hydrastis, but on account of the insolubility of the former and the presence of alcohol and other substances in the latter, the results were unsatisfactory. The method of administration of the hydrochlorate was by subcutaneous injection of aqueous solutions.

Effects of Poisonous Doses : The cat is much more susceptible to the action of the drug than is the rabbit. A dose of 0·6480 g. (10 grs.)

produced a very profuse salivation, commencing within thirty minutes of the injection ; the respiration was very rapid, and there was considerable depression. In all cases there was marked loss of appetite, widely-dilated pupils, slight spasms, and incoordination ; in some there was also vomiting. Death followed convulsions in one case, a strong full-grown male, on the second day after a dose of 1 gr. (15·4 gr.).

Action on the Heart : The action of the vagus was suspended in mammals by the direct application of the drug to the heart. Thus stimulation of the vagi did not stop the contraction of a rabbit's heart after the injection of 10 minims of 1 in 200 tap water at 37° into the pericardial sac. Before the injection a much weaker stimulation readily produced inhibition.

Action on the Blood Vessels : The drug produced contraction of the arterioles, but this effect appeared to be brought about chiefly through the nervous system. There was, however, some local action, as shown by the application to an inflamed conjunctiva of a solution containing 1 part of hydrastine hydrochlorate in 200 parts of tap-water.

Action on the Nervous System : It has been found by previous observers that poisonous doses of the drug produce convulsions similar to those caused by strychnine.

Action on the Digestive System : No effect was observed upon the digestive system of the rabbit and rat, but in the cat there was marked salivation, vomiting, and loss of appetite for several days after a large dose of the drug. In one cat, which died after receiving 1 g. (15 grs.), there was no gastric inflammation, but much bile in the gall bladder and bile-stained liquid in the stomach and upper part of the small intestine.

The saliva collected within fifteen and twenty-five minutes of the injection of 0·6480 g. (10 grs.) of the drug into a cat produced fatal results in frogs ; the quantity of saliva injected hypodermically was 15 and 20 minims respectively.

Action on the Urinary System : The drug is rapidly excreted by the kidneys, for it was found that the urine passed within twenty-five minutes of the injection of 0·6480 g. (10 grs.) into a cat caused typical convulsions in a frog, but a toxic quantity was still discharged on the second and third day. Normal urine when injected into a frog produced no effect.

Action on the Generative System : Pregnant rats and rabbits did not abort even after receiving large doses of the drug, but one cat aborted twelve days after a hypodermic injection of 1 g. (15·4 grs.), a second cat four days after, and a third cat twelve hours after, a dose

of 0·6480 g. (10 grs.). The fœtuses in each case showed no sign of life, and there is little doubt that they were killed by the drug before abortion commenced. The difference between the results in the case of the rabbits, rats and cats is to be attributed to the marked susceptibility of cats to the action of the drug. The liquor amnii was found by experiments on frogs to contain poisonous doses of the drug. Experiments upon rabbits and cats failed to show any action of the drug in producing contraction of the muscle fibre of the uterus.

Post-mortem Appearances: Rigor mortis comes on exceedingly quickly after death from poisonous doses of the drug, in some cases even within a minute or two of death. The rigidity is so marked that it was possible to hold the dead body of a cat upright by grasping one of its hind limbs.

The following conditions were observed: Marked distension of the right side of the heart, congestion of the pia mater, and an abnormally large quantity of bile.

REFERENCE.—"Brit. Med. Journ.," Oct. 8, 1898.

HYOSCINE.

Erb[1] finds that in cases of **Paralysis Agitans** the most useful remedy is hydrobomate of hyoscine (Merck's), but a preparation as fresh and reliable as possible is to be employed. In very small doses, given hypodermically, it diminishes the tremor, the restlessness, and stiffness for some hours, and makes the life of the patient tolerable, and enables him to follow his employment. The author states that he has seen the most severe tremor arrested by this drug. For many years he has used it without any bad effect. A slight increase of the dose is sometimes necessary. He has seldom seen any unpleasant effects of the drug, and he fails to understand Mendel's statement that he has seen alarming intoxication symptoms after minimal doses. Such symptoms Erb has never observed. The drug has seldom proved useless, and seldom has any patient been unable to continue it. He recommends very small doses hypodermically, from 2 to 4 decimilligrammes ($\frac{1}{3\frac{1}{2}0}$ to $\frac{1}{1\frac{1}{6}0}$ gr.) once or twice daily, and therefore caution in the administration is necessary. Often it is useful to inject the full doses in the forenoon and half the dose in the evening. The patients have then less tremor during the day and sleep well at night. The hyoscine can also be given internally in pill form with good effect, in doses of $\frac{1}{2\frac{1}{0}0}$ to $\frac{1}{1\frac{1}{0}0}$ of a grain.

Duboisine, which has been recommended by Mendel, has a similar action. It may be given in doses of 2 to 3 decimilligrammes two or three times daily. Observations which Erb has made, have

convinced him that it acts on the tremor and rigidity in the same manner as hyoscine, but somewhat larger doses are necessary. Duboisine acts better than hyoscine in some patients, in others hyoscine is more useful. These two drugs Erb considers to be the best palliative agents in paralysis agitans. Little can be said in favour of other palliatives, such as bromides, atropine, hyoscyamine, ergotine, valerian, strychnine, and cannabis indica.

[Duboisine is not a true alkaloid, but s a mixture, in uncertain proportions, of hyoscyamine and atropine.—ED.

REFERENCES.—[1] "Zeitschrift für prakt. Aertz.," No. 5, 1898; "Med. Chron.," June, 1898.

MAMMARY GLAND.

Dr. Robert Bell,[1] of Glasgow, reports two cases of **Fibroid of the Uterus** and two cases of **Menorrhagia** and **Dysmenorrhœa** in which remarkable results were obtained from the administration of extract of mammary gland.

Dr. John B. Shober[2] confirms these results. Without the aid of any other form of treatment the fibroid tumours decreased in size and the general health of the patient improved. Menorrhagia and metrorrhagia ceased and the menstrual periods came on at regular intervals. In two cases large doses caused cramp-like or contraction pains in the uterus, so that he assumes that mammary gland has an action similar to that of ergot.

REFERENCES.—[1] "Brit. Gynecol. Journ.," xii., p. 157-170, 1896-7; "Internat. Med. Mag.," vol. v., 1896, p. 376-386. [2] "Med. News," Aug. 27, 1898; "Med. Chron.," Oct., 1898; "Amer. Journ. Obstet.," Sept., 1898.

MATÉ.

Maté or Paraguay Tea is by no means a new remedy, and during the last sixty years articles have from time to time appeared advocating its claims as a substitute for China tea. Its chief constituent is caffeine. There are certain cases of **Dyspepsia** in which ordinary tea produces flatulence, and where probably the employment of some other member of the caffeine containing group might be used with advantage. Dr. Gordon Sharp[1] points out that the advantages claimed for maté are: (1,) That the infusion may be boiled without deterioration, and may be taken hot or cold; (2,) That the tannin is highly soluble and interferes little or not at all with gastric digestion; and (3,) That the beverage acts as a cerebral depressant, and therefore does not keep one awake at night as tea and coffee do. The tannin of maté does not tan leather, neither does it coagulate a solution of gelatin. With perchloride of iron it gives a greenish colouration instead of

the inky fluid given by an infusion of China tea. With maté egg albumen is as a fine white precipitate deposited, which on shaking is readily mixed with the fluid and which only slowly settles down. With China tea, on the other hand, the egg albumen separates out into a brown precipitate which floats on the top of the fluid in small pellets, and when shaken up at once separates and collects on the top.

Maté is prepared in the ordinary manner of China tea, and the same quantity is employed. The Brazil maté, on account of being mostly in fine powder, has to be strained through a fine wire sieve or muslin. Even then a sediment is found at the bottom of the cup, and a large part of this is found to be fine sand which gets in during the roasting of the leaves and twigs. The beverage may be drunk with sugar and cream or with a squeeze of lemon. The colour of the infusion is a light green, and thus it lacks the inviting appearance of China tea or coffee. The aroma is peculiar and repellent, although one is said to get over this. If a cupful of the beverage is allowed to stand for a few minutes a waxy or fatty substance collects on the top, and if this be skimmed off and tasted it is found to have the extreme flavour of the beverage. The South American native does not prepare the beverage in the manner mentioned. He makes a round hole of the size of a halfpenny in a pepo or gourd and scoops out the contents. This is his teapot or maté (hence the name the tea has received). This gourd he fills with tea, pours in boiling water, and inserts a long strainer like our teaspoon strainer, only with a hole running along the length of the handle. Through this long strainer he sucks the beverage as he carries his teapot about with him, and he sucks and fills all the day long and without either sugar or cream. This strainer is called a bonibilla, although the name is often given to combined gourd and strainer.

The disadvantages of maté, as compared with ordinary tea, are that the flavour is far from agreeable, and that it is apt to produce nausea and a dull drowsy headache. It is said to induce a distaste for tobacco, and that people who drink it are unable to enjoy a cigar or pipe.

REFERENCE.—[1] "Lancet," April 1, 1899.

NEURINE. (See "Choline.")

OVARIAN JUICE.

Ferré and Bestion[1] have studied the action of a glycerin and water extract of ovary, and find it to possess a distinct physiological influence both in men and women. The symptoms produced in the male

consist of progressive hypothermia, excitement of the genital apparatus with erections and ejaculation of semen, and finally tremors and paralysis. Hæmaturia may result. They found tubular nephritis, and in the paralysed animals congestion of the spinal cord. The authors think that the partial immunity of females to this effect is due to the fact that they are accustomed to the action of ovarian juice. They believe that ovarian gland should be cautiously given to women who have passed the climacteric.

REFERENCE.—[1] "La Méd. Mod.," May, 1898.

OXYCAMPHOR.

This substance is not obtained by direct oxidation of camphor, but by the replacing of a hydrogen atom by a hydroxyl group in the camphor molecule. It is a colourless, crystalline powder, which when fresh is odourless, soluble up to 2 per cent. in cold water, but in hot water or alcohol is much more soluble. Its solution is almost tasteless or slightly bitter; is neutral in reaction, and in exhibition of fresh drug forms an absolutely clear solution. In the presence of light and moisture it readily changes its appearance and composition.

Ehrlich[1] states that it diminishes the irritability of the respiratory centre, and recommends it very strongly indeed in the treatment of **Dyspnœa**. Investigation as to the effect of this remedy upon the circulatory system and the temperature shows that its influence is slight. To be sure, the pulse-rate diminishes to the extent of ten to twelve beats per minute, but this slowing may be accounted for by the improvement of respiration following its use. It may be administered as compressed tablets with sugar of milk, each containing 4 grains of the active substance. For administration, to avoid gastric disturbance, these tablets may be dissolved in hot water and given in solution with syrup. The daily dose is 30 grains.

REFERENCE.—[1] "Centralbl. f. d. ges. Therap.," 1899, vol. i., S. 1.

PARALDEHYDE.

Prof. John V. Shoemaker,[1] of Philadelphia, contributes a valuable summary of our knowledge of the therapeutical value of this drug. His facts and conclusions are arranged in a masterly manner, and the matter is thoroughly practical and to the point.

Paraldehyde is a polymeric form of ethylic aldehyde. It is a colourless fluid, of specific gravity 0·998, has a penetrating odour and a burning, disagreeable taste. Paraldehyde is soluble in eight volumes of cold water, but is less soluble in hot water. It dissolves likewise in alcohol and ether. It is an inflammable fluid, crystallises below 50° F. and boils at about 225° F. It may be administered

medicinally in syrup, aromatic water, with a vegetable bitter, dissolved in wine or spirits or enclosed in capsules. It may also be given by the rectum.

Paraldehyde is an antiseptic liquid, and, notwithstanding its unpleasant taste, is usually well borne by the stomach in medicinal doses. It is readily absorbed, not only by the stomach, but also by the rectum, and may therefore be given by the latter route if there is any objection to administering it by the usual method.

It diminishes blood-pressure, but under ordinary circumstances has no depressant effect upon the action of the heart. Upon the lungs it exerts an influence analogous to that which it has upon the circulation. Small quantities slightly reduce the respiratory movements, but they steady and deepen the acts. It is eliminated very largely by the lungs, and its characteristic odour may be detected in the breath for many hours after ingestion of a dose. In its elimination by the air-passages it has an advantageous action upon the cells of the lungs and mucous membrane of the bronchial tubes. It produces a direct local antiseptic effect, and changes the quality of the inflammatory products and secretions as well as diminishes their amount.

Paraldehyde is likewise eliminated by the kidneys, and in its exit from the system is a mild stimulant to those organs. It increases the water of the urine, though whether it has the same effect upon the solid constituents is a subject which still remains in doubt. It communicates its peculiar odour to the urine. It seems to be without action upon the skin. The principal influence of the drug is upon the cerebrum. Moderate doses occasion sound and healthy sleep without any injurious after-effects and followed by no headache or derangement of the digestive functions. Excessive quantities may give rise to sleepiness or some feeling of oppression upon the succeeding day, and toxic doses may prove fatal by their influence upon the respiratory centre. In medicinal amounts there is seldom seen any ill result from its administration.

The average medicinal dose of paraldehyde may be regarded as from 20 min. to 1 dr., although it has been given in 2-dr. doses. Like any other medicine of power, its action should be carefully watched.

In some instances a paraldehyde habit has been formed, but this drug would seem less likely than most others to induce addiction. Its unpleasant taste and the odour which it gives to the breath are objections to its needless use. Furthermore, it has been suggested that the odour upon the breath will betray one who accustoms himself to the use of paraldehyde, and that, in this respect, the disagreeable smell becomes really an advantage.

Paraldehyde is principally given in order to produce sleep. It serves, however, several other important purposes. **Restlessness, Agitation,** and **Dyspnœa** are markedly diminished under its influence. The headache frequently combined with the symptoms mentioned will often yield to the use of the same remedy, which may, therefore, fill several indications in a case. The drug is regarded by many competent observers as of special efficacy in cases of **Mental Disorder.** In its elimination by the lungs paraldehyde exerts a beneficial effect upon the respiratory passages, improving the character of the secretions and discharges, tranquillising the action of the muscles of the chest and restoring the normal rhythm.

From this association of properties paraldehyde is beneficial in **Insomnia,** whether of the simple variety or dependent upon organic disease. It is advantageous in **Chronic Bronchitis, Asthma,** dyspnœa of the functional variety, or that due to disease of the heart, lungs, or kidneys. In certain severe convulsive disorders, paraldehyde is reported to have been used with decidedly good results.

The author points out that among the many distressing features of consumption of the lungs insomnia is not, perhaps, the least, for it does more than annoy a patient by sleepless nights. It robs him of rest, diminishes the power of resistance, and thus contributes directly and indirectly to the decline of the vital forces. A remedy, therefore, which, like paraldehyde, produces refreshing sleep and alleviates cough, without causing any untoward secondary effects, is of material value in treatment.

The diuretic action of paraldehyde is an element of some importance in regard to its use in cardiac and renal cases, as it then has a synergistic effect with the more powerful drugs of that class, while its hypnotic influence is all its own, and thus it fulfils several valuable indications.

Mackie,[2] of Elgin, was the first to use paraldehyde for the relief of **Asthma.** The fact that paraldehyde is a sedative largely eliminated by the breath led him to try its effect in the spasm of idiopathic asthma. He administered it in a number of cases with uniformly successful results, and found that it speedily relieved the spasm and induced sleep.

Alexander Macgregor[3] has given the drug in a large number of cases of idiopathic asthma and other forms of spasmodic dyspnœa, and no drug in his hands has given such satisfactory results. In the treatment of hospital out-patients suffering from asthma morphine hypodermically is out of the question, and it is not advisable to prescribe chloral in such cases. Paraldehyde is absolutely safe. It not

only relieves the spasm but it induces tranquil refreshing sleep without any objectionable after-effects. No evil results follow a prolonged use of paraldehyde ; it does not give rise to a habit, and on this account it is a much more desirable drug than morphine or chloral

REFERENCES.—[1] "Merck's Archiv. of Mat. Med.," June, 1899 [2] "Brit. Med. Journ.," 1893, vol. i., p. 65 ; [3] "Lancet," Feb. 11, 1899.

PETROLEUM.

Of late petroleum emulsion has crept into use as a substitute for cod-liver oil in the case of patients who are unable to take the latter. Petroleum belongs to the paraffin series—that is to say, to a set of substances which are characterised by the great opposition which they offer to chemical change. One would not, therefore, expect on *a priori* grounds that petroleum would be capable of assimilation in the body.

Robert Hutchison[1] in order to put the matter to practical test recently carried out some experiments on the absorption of petroleum emulsion by man, the results of which entirely confirm the suspicions entertained on chemical grounds, and lead to the conviction that petroleum is of absolutely no use as a substitute for cod-liver oil.

The author employed a well-known and widely advertised emulsion of pure petroleum. He describes in detail the experiments conducted, and concludes from them that petroleum cannot be regarded as a food or cod-liver oil substitute. Nor is it probable that petroleum has any remote action, say, upon the lungs. It is conceivable that if crude petroleum were employed, some of the volatile substances contained in it might enter the blood and be excreted by the mucous membrane of the air passages, but the purer the petroleum used the less chance is there of any such occurrence.

Whether petroleum may have any value as a local application in intestinal diseases must be left undecided. One can imagine that there may be conditions of the intestinal mucous membrane in which the administration of petroleum might be of value in the same way as the application of vaseline to the skin, by forming a sort of pellicle on the intestinal surface.

In one sense it may be regarded as an artificial intestinal mucus, and it might in that way have some value in certain forms of constipation. It is worth considering whether it might not be a useful vehicle for the administration of intestinal antiseptics. Carbolic acid dissolves in it, and if the petroleum prevented the absorption of the acid it would also bring the latter into intimate mixture with the intestinal contents, and act as a sort of internal "carbolic vaseline." The author's observations show conclusively that petroleum, even when

given in the form of emulsion, is not absorbed at all, and as a consequence can have no nutritive value.

REFERENCE.—[1] "Brit. Med. Journ.," March 24, 1899.

PHENOSOL. (See "Pyrosal.")

PLACENTA (Therapeutic Action of).

A new form of organotherapy has been introduced by Iscovesco.[1] Taking as a basis the alleged fact that bitches are but seldom affected with puerperal disease, he thought it might be due to the circumstance that they habitually devour their after-births. He therefore began to experiment with its action on human females, for which he claims successful results. But, even accepting the clinical facts, we think that the explanation of the immunity of bitches from puerperal disease, on which the treatment is founded, is far fetched. A much more likely explanation is that these animals are not exposed to infection.

REFERENCE.—[1] "La Méd. Mod.," April 27, 1898.

PODOPHYLLIN.

Dr. Hector Mackenzie and Dr. Walter E. Dixon[1] have investigated the physiological action and therapeutic properties of podophyllin, and have paid special attention to Indian podophyllin.

The genus *Podophyllum* comprises two species, the American variety, *P. peltatum*—alone recognised by the British Pharmacopœia at the present time—and the Himalayan, *P. emodi.*

P. peltatum, or May-apple, grows in the Northern and Middle United States. *P. emodi* grows abundantly in Northern India, inhabiting the shady valleys in the inner ranges of the Himalayas, being particularly prevalent in Cashmere and Runawin, and is a plant which can be cultivated with ease. It is said to be one of the bile-expelling plants of Sanskrit writers, and has been mentioned in the Indian Pharmacopœia as a possible source of podophyllin.

The authors arrive at the following conclusions :—

(1,) Indian podophyllin is an active purgative and a useful therapeutic agent ; that it may be substituted for *P. peltatum ;* but it is important that the physician should know which sample he is prescribing, as the Indian variety is nearly twice as physiologically effective as the American.

(2,) The active principles contained in the crude resin are two substances—(*a*,) Crystalline podophyllo-toxin ; (*b*,) Podophyllo-resin —both of which act as excellent laxatives in small doses, without secondary constipation or other objectionable symptoms.

(3,) Although both these substances act very similarly on the alimentary tract, it is only the podophyllo-resin which exerts a true

cholagogue effect, which shows itself rather by a large increase of the solids secreted than by an increased quantity.

(4,) Both exert their specific activity when injected hypodermically in alcoholic solution, but in man so much irritation is produced as to forbid their employment in this manner.

REFERENCE.—"Edin. Med. Journ.," Nov., 1898.

PROTARGOL and ARGONIN.

Protargol and argonin are silver proteid compounds, solutions of which cannot be precipitated by sodium chloride or by albuminous fluids. Protargol contains 8·3 per cent. of silver; it is a yellowish powder, readily soluble in cold as well as in hot water, forming a clear solution. It keeps well in powder form and in solution.

Argonin contains 4·2 per cent of silver. It is also a powder, fine and white, readily soluble in water on gently warming, but its solution is turbid. Argonin decomposes if exposed to too much heat in the preparation of its solution, and when decomposed it is very irritating. It does not keep well in solution, even in dark-coloured bottles.

Protargol and argonin are superior to silver nitrate in the following points: (1,) The quicker destruction of the gonococcus; (2,) The earlier disappearance of the secretion and the inflammatory process; (3,) The resolution of the injured corneal and conjunctival tissues.

The gonococcus disappears as early as two weeks after commencing treatment, and never later than four weeks, whilst the average persistence of the specific germ under silver nitrate treatment is about five weeks. With these new silver salts there is less ulceration of the cornea, with iris-protrusion, less corneal staphyloma, and less cicatrisation of the conjunctiva than with silver nitrate. while pain and reaction are much less. The directions for making solutions of argonin readily and rapidly are as follows: Ten parts of cold water are first introduced into a flask and then one part of argonin. The whole is then vigorously shaken until a uniform mixture is obtained, when sufficient boiling water is added to make up the desired quantity, the whole being frequently shaken till complete solution occurs, when the mixture is strained through a piece of gauze. The most effective strength of argonin for clinical work is 3 per cent. To prepare solutions of protargol the powder is stirred with water, with or without the addition of glycerin, into a paste, and then diluted by adding the necessary quantity of cold or lukewarm water. Solutions of 0·25 to 2 per cent. are generally employed.

REFERENCES.—E. S. Peck, "Med. News," Jan. 21, 1899; F. E. Cheney, "Boston Med. and Surg. Journ.," Aug. 25, 1898.

PYROSAL and PHENOSOL.

Burghart,[1] of Leyden's clinic, discusses these two new antipyretics, which have been used in the clinic for nearly a year.

Pyrosal is an acid salt of the salicylacetate of antipyrine and phenosol salicylacetic acid combined with p.-phenetidin. It dissolves with difficulty in water, ether, or alcohol, and splits up in the presence of acids and bases into its components.

Phenosol dissolves with difficulty in water, ether, and cold alcohol, but more readily in hot alcohol. When heated with alkalies, it splits up into its components.

Both salts have a bitter acid taste, but they are readily taken in tabloids or in milk. They are both split up into their components in the alimentary canal, but they are readily absorbed, as the salicylic reaction soon appears in the urine.

As pyrosal contains 50 per cent. antipyrine and 36 to 37 per cent. salicylic acid, and phenosol 57 per cent. phenacetin and 43 per cent. salicylic acid, the dose given is 0·59 twice to six times in the day. No unpleasant symptoms were produced by them. They will not cure all rheumatic and neuralgic affections, nor will they prevent the occurrence of complications, but negative results are met with less frequently when these agents are used than the more usual remedies. Their action is more prompt than the salicylates. Details are given of twenty-five illustrative cases.

REFERENCES.—[1] "Deut. med. Woch.," Oct. 15, 1898; "Brit. Med. Journ.," Nov. 5, 1898.

SERA.

Anti-pneumococcic Serum.—An anti-pneumococcic serum was first prepared on a large scale by J. W. Washbourne[1] in February, 1897. This serum was obtained by injecting a pony with increasing doses of cultivations of the pneumococcus. The potency of the serum was tested by mixing varying quantities with a ten-fold fatal dose of a living cultivation of the pneumococcus, and injecting the mixture into the peritoneal cavity of a rabbit. It was found that 0·03 cubic centimètre of the serum was the smallest quantity which, when tested in this way, protected the animal from death. Animals which had already been infected could be cured by injecting larger quantities of the serum, provided the treatment was adopted not later than in the first quarter of the disease. The serum was thus shown to possess a distinct therapeutic action.

Two cases of **Pneumonia** were successfully treated with the serum. A full account of the action of the serum and of the method of standardising it was published by Washbourne and Eyre.[2]

In March, 1897, Pane[3] gave an account of sera which he had obtained by immunising a cow and a donkey, and which he had used in the treatment of pneumonia. Since then he has continued his researches, and is now supplying the serum in large quantities. The present serum is obtained from donkeys and is of two qualities, No. 1 and No. 2. Of these No. 1 is stated to be of such a strength that one cubic centimètre neutralises in the rabbit 1,000 fatal doses of the pneumococcus, while No. 2 neutralises 3,000 fatal doses.

Washbourne and Eyre[4] have obtained good results with Pane's No. 2 serum, and consider that it is likely to prove of the very greatest value in the treatment of pneumonia and other pneumococcal affections.

Anti-streptococcic Serum.—Saunders[5] insists on the desirability of finding an active curative and immunising serum for **Streptococcic Infection,** since we have no drug by which this infection can be favourably influenced, and most frequently the micro-organisms have penetrated too deeply into the tissues to be reached by antiseptics before treatment is instituted.

Although the exact properties of this serum are not fully determined, it seems established that it has no antitoxic potency, but stimulates phagocytosis and possibly renders the plasma capable of more or less paralysing the micrococci.

The author has noted good effect in less than twelve hours. The temperature drops from 104° to 100°, the mental depression disappears, the appetite returns, the mouth becomes moistened with an increased flow of saliva, the secretion of urine is increased, and suppuration is checked.

An absolutely fresh serum is needed—not over two or three weeks old, as these sera rapidly deteriorate.

Five cases treated by the author are then detailed. Four of them were puerperal cases, the fifth being infected by a cut. Of the four puerperal cases, the diagnosis was established by demonstrating streptococci in the lochia. In one case there were also staphylococci present, which led to the death of the patient, since no streptococci could be cultivated from the body. In another case the streptococcic was followed by typhoid infection, and the patient ultimately recovered. The remaining cases were typical streptococci infections, and recovery was rapid after the serum treatment was resorted to. The author is of opinion that the study of these cases shows a definite effect of the anti-streptococcic serum in every case.

Mr. Frank F. Bond[6] has published some very striking cases of **Erysipelas** treated with anti-streptococcic serum. The dose given was 10 c.c., and the injection was made into the abdominal wall. The

author points out that in these cases there must be no delay, and that time is of all importance. The dose may have to be repeated, and it is better to give too much than too little.

Anti-tetanic Serum.—William F. Gill[7] of the Paisley Infirmary, has used this serum in the treatment of acute **Tetanus.** The author arrives at the following conclusions :—

The treatment aims at these objects : (1,) Maintenance of the patient's strength ; (2,) Controlling, as far as possible, the painful spasms, by chloral ; (3,) Restraining the development of the toxin in the blood by hypodermic injections of antitoxin ; and, (4,) Preventing the toxin from affecting the nerve cells in the higher centres by intracerebral injections of antitoxin. In cases where the presence of bacilli is still suspected, local operation is necessary ; (5,) Immediate improvement is not to be looked for after intracerebral injection. In a case reported by Semple[8] improvement was delayed for a week, and in the author's case for nine days.

The quantities given were 71 c.cm. by intracerebral, and 104 c.cm. by hypodermic, injection of serum of ordinary strength. Apart from a scarlatiniform rash over the abdomen, lasting three days, the injections produced no ill-effect. There was no sepsis.

Horse Serum.—Solares[9] has treated eight hundred children at the Children's Hospital at Barcelona by the administration of physiological horse serum, and has met with most gratifying success in cases of **Anæmia, Chlorosis, Chorea, Incontinence of Urine, Scrofula, Adenitis, Neurasthenia,** and during convalescence from acute diseases. He recommends it as a strengthening, stimulating tonic, effective and harmless. The occasional slight, transient, secondary effects observed were similar to those that follow injections of antitoxin, and are probably due to the same causes. The nutritive processes are powerfully promoted and the nervous system stimulated. The author ascribes its chief tonic properties to the globulins or spermins in serum which accelerate the intraorganic oxidations.

REFERENCES.—[1] "Brit. Med. Journ.," Feb. 27, 1897 ; [2] "Journ. of Pathology," Jan., 1898 ; [3] "Central. für Baktr.," May 27, 1897 ; [4] "Lancet," April 8, 1899 ; [5] "Amer. Journ. of Obstet.," Jan., 1899; [6] "Lancet," June 24, 1899 ; also "Med. Press and Circ.," Sept. 27, 1899 ; [7] "Brit. Med. Journ.," April 15, 1899; [8] Ibid., Jan. 7, 899; [9] "Revista de Anatom. Path. y Clin.," April 1, 1898; "Journ. Amer. Med. Apoc.," July 23, 1898.

STIPA VIRIDULA.

Dr. Lochart Gillespie[1] states that in some parts of the United States travellers on horseback or cowboys driving herds of cattle from one

place to another over the higher prairie regions, are often astonished and put to no little inconvenience when they wake some morning in the encampment chosen for the night's rest to find their horses and cattle unfit to proceed on the journey. They, should the facts be new to them, imagine that the animals showing signs of indisposition have been poisoned ; indeed, the severity of the symptoms is often so great that speedy fatal results are apprehended.

The traveller's horse is a pitiable object. He stands with head and tail drooping, his form quivering, streams of sweat pouring down his sides, his respiratory movements hurried and panting, his heart's action increased in force, judging by the evidence of palpation ; while his excretion of urine is markedly increased, with symptoms of irritation and stranguary accompanying its expulsion. The animal is incapable of movement. He appears about to die. No death, however, either in horses or cattle is known to have actually been caused by the grass, for all these symptoms follow ingestion of a rare grass, the *Stipa viridula*, growing in scattered bunches over the elevated prairies in New Mexico and Texas.

The plant grows in clumps or bunches of closely-applied, tall, elegant stems, surmounted by a large culm. The stems are firm, jointed, and when dry are straw-like. They rise to a height of two feet or more from thick masses of short rhizomes, bearing numerous rootlets in company with several other stalks. When grown from seed it appears not to flower during the first year, but sending up a few leaves, extracts from the earth enough nutriment, which is stored in the rhizomes, to permit of its full maturation during the following season. The culms are jointed, long narrow leaf blades springing from each node. The terminal part bears a bloom, with hermaphrodite spikelets, each one-flowered, and with two empty glumes. The flowering glumes are entire, hard, narrow, and furnished with a long, stout, persistent awn. The ends become in course of time very hard in texture. It is often termed locally "sleepy grass," but has been identified, by Professor Balfour, with *Stipa viridula*.

Hæckel mentions that this stipa exerts toxic effects on cattle, that *Stipa inebrians*, another American species, acts similarly, in addition to the *Stipa sibrica* of the Russian steppes. The results which follow the ingestion of *Stipa viridula* are so well illustrated by the term "inebrians" that the active principle present in them may probably be discovered to be the same. Another Russian variety (*Stipa capillata*) causes great annoyance to shepherds, as the pointed hairy, callus of its glume works its way into the skins of sheep, and penetrating the epidermis, aided by the backward direction of the hairs which cover

it, frequently reaches the vital organs of the animal, and may bring about a fatal result. *Stipa spartea*, or the "porcupine grass" of North America; *Stipa tenacia*, or the esparto grass of Spain; and *Stipa pennata* and *Stipa tirea* of Russia are closely allied forms.

It is probable that the action of the grass on horses and cattle—it has none, as far as my information goes, upon sheep—resembles that of a narcotic, along with stimulation of the respiratory and urinary centre, disturbance of the cardiac mechanism, and the production of irritation in the urogenital tract. In increasing the flow of sweat it acts like opium. In about two days the more acute symptoms have passed off, but the general health of the animal suffers for some time. One of the inhabitants of the district was, at my request, induced to eat some of the fresh grass, and experienced very much the same symptoms; here, however, my informant cannot condescend to particulars.

The results which ensue upon the ingestion of *Stipa viridula* have nothing in common with the symptoms caused by the loco weed. These are not due to any definite plant, but to organisms living on and swallowed with various kinds of fodder.

The author finds, as the result of a series of pharmacological investigations, that *Stipa viridula* contains some body or bodies which it is difficult to isolate, but which cause marked symptoms in frogs and rabbits as well as in horses and cattle observed in its native habitat. From the descriptions given, the grass appears to act not only as a powerful nervous narcotic but as a diuretic, a sudorific, and as an irritant both of the respiratory and cardiac organs.

In the frog and rabbit a narcotic and paralytic power is well shown, but in the frog the respiratory movements appear to be slower, the heart acted in a manner somewhat recalling digitalis, while in the rabbit the pupil is contracted, the respirations and heart-beat are quickened, while the behaviour of the animal strongly suggests the idea that it suffers from hallucinations. The movements of fright shown by the rabbit evidently arising from imaginary objects apparent in front of it were most marked, and culminated in its progression backwards for some feet, a mode of progression unsuited to the rabbit's conformation, and most unusual in the species, while alarm was indicated the while by the position of the ears and the constant shrinking back of the head.

Though *Stipa inebrians* and *Stipa viridula* may be different plants, the effects on the rabbit suggest that *Stipa viridula* was the cause of this *cuniculus inebrians*.

REFERENCE.—[1] "Brit. Med. Journ.," Oct. 8, 1898.

SUPRARENAL EXTRACT.

Swale Vincent[1] has made a series of observations on the action of extract of suprarenal capsule on frogs, toads, rats and mice, guinea-pigs and rabbits.

In guinea-pigs death is caused by an extract of the 6gm. of fresh gland. Blood-coloured urine is frequent, and bleeding from the mouth and nostrils often occurs.

In rabbits the amount necessary to cause death differs much, and some animals need enormous doses. Rabbits become sleepy and listless, not excited. Hæmaturia and bleeding from the mouth and nose never occur. Peculiar attitudes are assumed, and the hind legs become weak and paralysed before the fore legs and limbs are affected. The paralysis is central, not peripheral.

The author considers that the suprarenal capsule contains an active principle which acts both centrally and peripherally. The central action is upon the motor centres of the brain. The peripheral is indicated by the blood pressure. Whether there are two active substances has not been determined. The central effect may also lead to the contraction of the arteries in some part of the central nervous system. Hæmaturia may arise from the high blood-pressure. The cause of death is doubtful. There seems to be some action upon the respiratory centre.

Vincent notices some indications of immunity being produced by moderate doses of suprarenal extract. In rabbits, at least, a partial immunity to the action of suprarenal extract may be produced by previous injections, which passes off after a few weeks. He has not found any indication that repeated injections of suprarenal extract caused hypertrophy of the gland capsule. Extract of the liver, spleen, etc., produces no physiological action when subcutaneously injected, like to that produced by extract of the suprarenal capsules. The cortical portion of the suprarenal glands is quite inactive as regards appreciable general effects. The toxic material is easily excreted, hence the large dose required to kill and the ease with which recovery takes place.

In dogs the first effect is excitement, and increased muscular activity which passes into agitation with tremors until paresis and finally paralysis come on. There is abundant micturition but no hæmaturia.

In cats the most notable feature is enormous rapidity of the respiratory movements in the early stage, but paralysis of the limbs is not so marked as in other animals.

The author made experiments on cats and dogs with other extracts,

and came to the conclusion that with the exception possibly of the thyroid, the suprarenal gland is the only mammalian gland or tissue which produces toxic effects on them when a boiled and filtered extract is administered subcutaneously.

Gürber[1] finds that in the rabbit, as in other animals, injection of suprarenal extract causes a rise of blood pressure, due to a direct stimulation of the muscles in the vascular walls. There is also a slowing of the pulse, which he attributes to a compensatory action of the vagus. He has been unable to establish the relationship alleged by Mühlmann between the active principle of suprarenal extract and pyrocatechin, nor does he find the latter substance to cause any rise of blood pressure when injected. The author has succeeded in obtaining a crystallisable substance from the gland which has this vasoconstrictor property. In addition, he has been able to prepare a substance, the existence of which had not been previously suspected, and which caused a fall of blood pressure when injected. It is obtained by drying a slightly acid aqueous suprarenal extract over the water bath, powdering the residue, and heating for some hours to 140° in a vacuum tube. The product is extracted with alcohol, cooled to 0·5° C. and filtered; the filtrate contains the vasodilator substance. This the author believes to be performed in the suprarenal, as it cannot be obtained by applying the above-mentioned process to the vaso-constrictor body. Owing to the solubility of the latter substance, Gürber has not yet succeeded in obtaining both at the same time from the suprarenal.

An admirable summary of the action of the suprarenal glands and of the various papers which have been published on the subject by Prof. R. Stockman of Glasgow, will be found in the "Edinburgh Medical Journal," Feb., 1897.

REFERENCES.—[1] "Journ. of Physiol.," vol. xxii, Sept. 11, 1897, and April 25, 1898; [2] "Sitzungs d. Physik-med. Gesellschaft," Wursburg, 1897; "Brit. Med. Journ.," Oct. 15, 1898; see also paper by Dr. Boinet, "Gazette des Hôpitaux," No. 81, July 20, 1899.

THYMUS EXTRACT.

Mr. Rushton Parker[1] has published four cases of **Exophthalmic Goitre,** in which apparently considerable benefit was derived from the administration of tabloids of this substance.

REFERENCE.—[1] "Brit. Med. Journ," Jan. 7, 1899.

THYROID GLAND.

The Galstonian lectures delivered by Dr. George R. Murray[1] on the pathology of the thyroid gland, contain much valuable information respecting treatment of various diseases with this drug.

Preparations.—Dr. Murray observed that in out-of-the-way places, and where expense was a consideration, the actual gland itself containing the secretion might be administered. One-eighth to a quarter of a lobe of the sheep's gland was a suitable daily dose, one quarter being equivalent to about 10 minims of liquor thyroidei; it should be minced. It may be taken in glycerin or some similar vehicle, and may be lightly cooked on the outside by frying or boiling. As a rule, however, it was better to employ one of the preparations of the thyroid gland. The liquor thyroidei was the most convenient preparation for general use, and in his experience the most efficient and uniform in strength. Not more than a sufficient supply for a fortnight should be obtained at one time, and the patient should measure out the dose and mix with a dessertspoonful of water at the time of taking. The dry thyroid of the Pharmacopœia might be given as a powder, or made up into a pill or tablet. If the dried preparation became damp at all, it was liable to decompose and become unfit for use.

In primary and secondary **Myxœdema** in man were seen the results of loss of thyroid secretion pure and simple, and consequently they were able to remove the symptoms entirely by giving a sufficient supply of the secretion.

The main objects of the treatment were to remove the symptoms by restoring normal metabolism as rapidly as possible without risk to the patient, and when that had been accomplished, so to regulate the treatment as to continue the supply of thyroid secretion in sufficient quantity to maintain the normal rate of metabolism of the tissues generally. For that purpose the treatment was divided into two stages. During the first stage the tissues were gradually brought back to a normal condition. That might, according to the severity of the symptoms, require from one to three months. As soon as the symptoms had entirely disappeared, the first stage was completed. The condition of the atrophied thyroid gland was not influenced by the treatment, so that if the artificial supply of secretion was discontinued at that or any other time of the patient's life, all the symptoms of myxœdema would gradually return, as he had found by actual experience. Thus the second stage of the treatment of necessity lasts as long as the patient lives. It is therefore necessary to make the permanent daily dose as nearly as possible equivalent to the normal amount of secretion. If the dose fell below that, slight symptoms of myxœdema would reappear, and if it was excessive a condition of thyroidism will be produced.

In advanced cases the first stage of the treatment must be carried out with great caution, especially if any symptoms of degeneration of

the cardiac muscle, such as attacks of syncope, dyspnœa on exertion, feeble or irregular pulse, or weak heart-sounds were present. Under these circumstances the patient should be confined to bed at first, and only small doses of 3 to 5 minims of liquor thyroidei given each night. This dose, if well borne, might be gradually increased up to 10 minims. If not confined to bed, these patients are apt to make use of their returning vigour too soon, before the heart has had time to recover, and to adapt itself to the altered conditions brought about by the treatment.

At the present day, however, the greater number which require treatment were seen in the early stages before any cardiac symptoms developed. Such patients were able to go about, but unusual exertion should be avoided during the first stage of the treatment. The daily dose of 10 minims of the extract might be given nightly, and increased at the end of a fortnight to 15 minims if decided improvement had not already taken place. Undue acceleration of the pulse to 90 or 100, or rapid loss of weight were indications for reducing the dose.

Symptoms of gastro-intestinal catarrh were sometimes seen when a raw gland was used, but were seldom observed after a suitable preparation. When they arose the treatment should be stopped until they had passed away, and when the treatment was recommenced smaller doses should be given. When there was well-marked anæmia it was as well to give iron as well as thyroid extract, and for this purpose 5 grains of dried sulphate of iron in a pill two or three times daily were suitable.

The second stage of treatment began after all the symptoms of myxœdema had disappeared. During this stage, which lasted whilst the patient lived, he must continue to take a daily dose equivalent to the daily output of the gland before it became diseased. An occasional intermission of a week or so had little or no effect, but if it lasted three or four weeks the temperature fell one or two degrees, and the myxœdematous swelling of the face began again to develop. The most suitable dose during the second stage was, generally speaking, 10 minims of the extract once a day, but if slight symptoms reappeared, the permanent dose should be increased to 12 or 15 minims. Though this had not been necessary in any of his own cases, in a few cases that dose had produced acceleration of the pulse, and the permanent dose had to be fixed at 5 or 7 minims a day. In doubtful cases a dose of 10 minims of thyroid extract should be given daily for three or four weeks, and if the symptoms steadily diminished it might be assumed that they were the result of thyroidal disease.

When the treatment of a well-marked case of myxœdema was carried out on the lines just indicated, very definite and interesting results were soon obtained. One of the earliest signs of improvement was in the return of the temperature to the normal level. This was illustrated by the chart shown, by which it would be seen that the temperature before treatment ranged from 95° to 96° F., whereas during the second, third, and fourth weeks of treatment it varied between 96° and 98°. As the temperature rises to normal the former sensitiveness to cold was lost, and the frequency of the pulse was increased. The most striking changes were those which took place in the skin with its appendages, and in the subcutaneous tissues. The myxœdematous swelling gradually disappeared from all parts of the body, so that the face and hands once more assumed their natural appearance, and the free movement of the limbs, which had been considerably hampered by the swelling, was regained. The reduction of the swelling was accompanied by a loss of weight, which might amount to as much as two or even four stones. The skin, which, as a result of the removal of the swelling, may for a time remain loose and wrinkled, became warm and moist owing to a renewal of the secretory activity of the sebaceous and sweat glands. Not infrequently there was some desquamation which might occur in fine scales or in large flakes from the palms of the hands and soles of the feet, as observed by Byrom Bramwell. The hair follicles resumed their proper function, so that even where there had been complete baldness, a good growth of hair was developed in the course of six or twelve months. Considerable changes are thus produced in the appearance of the patient.

In addition to these very obvious signs of improvement, the feeling of lassitude passed away, and normal muscular strength and activity were regained. As a result of this, those who before treatment could barely walk a mile were enabled to walk long distances, climb mountains, and undertake various other forms of exercise. Mental processes became more active, the memory improved, and the hallucinations disappeared. In some cases in which actual insanity had occurred it also had been cured. If albuminuria without actual renal disease had been present it disappeared, while the amount of urine was increased. The observations of Ord and White showed that the total amount of nitrogen eliminated was increased, and that the increase was almost entirely due to the increase of urea in the urine. At first, the amount of urea excreted might not only equal but actually exceed the normal average quantity. The number of red corpuscles in the blood was increased. In patients who had not reached the menopause, menstruation returned, and took place

regularly, even where there had been amenorrhœa for several years. In fact, the myxœdema was entirely cured, though the fibrosis of the thyroid gland remained unaffected by the treatment.

These general principles of treatment are equally applicable to cases of **Cretinism** and of **Exophthalmic Goitre.**

Dr. Robert Buchanan[2] records a case of myxœdema treated with colloid material, prepared from thyroid according to Dr. Robert Hutchinson's formula. The results, as shown by photographs, were very good.

Murrell[3] reports a case of **Diabetes Mellitus** treated successfully by the administration of thyroid. The patient was a married woman, aged twenty-eight, and for some months had passed on an average 112 ounces of urine a day containing 5848 grains of sugar. Fresh thyroid was employed, and was administered in 4-grain pills, three being given three times a day. In a fortnight, and without any restriction in dietary, the urine fell to 85 ounces and the sugar to 1,346 grains. On discontinuing the thyroid, the urine and sugar increased in quantity, but rapidly decreased on resuming the drug. The dry thyroid of the Pharmacopœia was found to be just as efficacious as the fresh gland. The patient lost in weight under the treatment, and it was suggested that probably the best results would be obtained in those cases of glycosuria in elderly people in which obesity is a prominent feature.

Osler[4], Marsh of Troy, Lustgarten, Lewin, Heller and Dreschfeld, have all employed thyroid in the treatment of scleroderma, and all agree that it has no specific action in this disease, as it has in myxœdema.

Delace,[5] finding that Vigier had used thyroid with benefit in the treatment of **Metrorrhagia,** gave it in the case of **Hæmophilia** with excessive anæmia, and found that it at once arrested the hæmorrhage.

For abstract of Hutchinson's researches, see "Medical Annual," 1899, p. 71. For chemistry and mode of preparation of the colloid substance, see "Brit. Med. Journ.," March 21, 1896, Jan. 23, 1897, and Feb. 17, 1897 ; also "Journ. Physiol.," vol. xx, p. 474.

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TOXINS and ANTITOXINS.

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Behring[1] defines immunity as "the protection exhibited by an individual against the disease-producing activity of a poison in quantities that would be destructive for others." The term is a

relative one, and, according to his conception of it, the rabbit which resists the poisonous properties of morphine given by the mouth or beneath the skin is immune, even though it succumbs to intra-cerebral injections. Immunity of this kind, as well as the resistance which many animals manifest to serpents' venom, tetanus and diphtheria toxins, tuberculin, etc., administered by the mouth may depend upon chemical changes brought about by the digestive fluids, or may depend upon purely physical reasons, the poisons, for example, being unable readily to pass through the mucous membranes, and passing out of the alimentary tract unchanged. The immunity of the rabbit to morphine may depend upon inability of the poison to osmose through the vessel walls.

In this opinion Behring is supported by Brunner,[2] who, as the result of studies upon the effect of intra-cerebral injection of various alkaloids, comes to the conclusion that the various means by which the organism wards off poisons, neutralisation, destruction by the bile, thyroid, muscles, lungs, etc., are all intimately associated with different conditions of the vascular endothelium, by which the poison is prevented from acting upon the organs.

In addition to passive immunity of this kind there is an immunity that depends upon chemical activity.

Behring found that if an animal be protected against fatal doses of tetanus toxin by an injection of tetanus antitoxin, it is possible to kill it by intra-cerebral injections of the toxin. Mixtures of toxin and antitoxin injected into the brain are harmless. It would, therefore, seem as if: (1,) The tetanus toxin did not readily pass through the walls of the cerebral vessels to be neutralised by antitoxin contained within them ; and (2,) That the antitoxin did not readily pass through to neutralise the toxin injected into the brain substance.

If at the time of administering the intra-cerebral injection of toxin to the immunised animal the blood-vessels are damaged and blood infiltrates the tissues, the animal does not succumb to the injection. These observations would indicate that the reaction is a chemical one, requiring contact of toxin and antitoxin.

Behring describes two varieties of immunity to poisons, the *hæmatogenous* and the *histogenous*. The former is a *passive* immunity, the latter an *active* immunity. For the histogenous form he prefers the term "Osopathic," for the hæmatogenous form "Antitoxic." The antitoxic immunity never becomes isopathic, is not hereditary, and disappears as soon as the antitoxin disappears from the blood. Isopathic immunity may be accompanied by hypersensitivity of parts of the body naturally sensitive to the poison.

By comparing animals whose blood has been brought to the same degree of protective activity by isopathic and by antitoxic immunisation he found the isopathic group to be more sensitive to toxin than the antitoxic, and concluded in the cases of isopathic immunisation, after that of the hæmatogenous protection, a hypersensitivity to the toxin remains. No one has yet been able, however, to demonstrate that organs originally sensitive to the poison become abnormally so, or that the hypersensitivity developed can be transmitted to offspring.

In cases of apparent heredity the immunity developed can always be referred to the milk, etc., of the parent. The offspring of isopathically immunised guinea-pigs have precisely the same sensitivity to poisons as the young of normal guinea-pigs.

According to Behring's experience, only the cell-poisons are appropriate for isopathic immunisation, their action being to attack the organised, living, reproductive body-elements. The humoral poisons, on the other hand, alter the body juices. The general cell-poisons which attack both animal and vegetable cells, like carbolic acid, bichloride of mercury, etc., are not suitable for isopathic immunisation. The poisons most appropriate for the purpose are the specific alkaloids, such as strychnine, tetanus toxin, etc., which act upon cells or groups of cells in the special organs of the body. All of the poisons which bring about isopathic immunity are dialysable with difficulty, this fact being in keeping that they all produce their symptoms after a more or less prolonged period of incubation.

All of the early theories of immunity erred in seeking for the phenomena in conditions *detrimental or destructive to the parasites.* Behring says immunity to the parasites of diphtheria and tetanus depend upon immunity to their poisons.

Dr. C. J. Martin and Dr. Thomas Cherry,[3] have undertaken an investigation into the nature of the antagonism between toxins and antitoxins.

Calmette in 1895 made experiments with the toxin of cobra poison and its antitoxin, which he had recently succeeded in producing. Cobra poison is not apparently attenuated by heating its solutions to 68° C. for ten minutes. The antitoxin is, however, completely destroyed by this treatment. Mixtures of cobra poison and antitoxin which produced no symptoms when injected into a rabbit killed similar rabbits in a few hours if after the mixture had remained in contact for ten minutes it were heated for another ten minutes to 68° C. before injecting. From his experiments Calmette concluded that the toxin of snake venom does not interact with its antitoxin *in*

vitro, but only *in corpore*, and therefore that its action cannot be explained as a simple chemical operation between the two.

Wassermann found that the toxin produced by the bacillus pyocyaneus was not destroyed by boiling, whereas its antitoxin was. The amount of toxin and antitoxin which neutralised each other was first determined by experiment, then the same quantities and proportions of these substances were allowed to remain in contact and afterwards heated to boiling. The animals receiving an injection of this heated mixture died, whereas the control animals which received an equal dose unheated recovered. From these experiments Wassermann concluded that the toxin of pyocyaneus does not interact with its antitoxin *in vitro*, but only *in corpore*, and therefore that it cannot be explained as a simple chemical operation between the two.

Nikanorow discovered that the precipitate formed by the addition of a 1 per cent. solution of cupric acetate was possessed of antitoxic properties and the filtrate not. A 1 per cent. solution of cupric acetate does not, however, precipitate the toxin. Mixtures of the two could thus be separated by the use of this reagent. Experiments conducted along the lines mentioned in the experiments above led to identical results.

Marenghi made some observations with the toxin and antitoxin of diphtheria which were identical in principle with those of Calmette and Wassermann. In this case, however, it is the toxin which is destroyed at the lower temperature (60° C., Roux and Yersin), whereas the antitoxic properties still remained after heating the serum to 70° C. Mixtures of the two in such proportions as to cause no symptoms when injected into a guinea-pig were made. After heating such mixture to a temperature sufficient to destroy the toxin, the mixture was discovered now to possess antitoxic properties which could be titrated against a fresh amount of toxin.

The view that the operation is a direct one has always received support from the general truth of the "law on multiples," on which indeed the antitoxin notation has been founded. It is further strengthened by the observations of Kanthack and Ehrlich.

Kanthack, in 1896, demonstrated that the influence of cobra poison in preventing the coagulation of *shed* blood, was prevented by the previous admixture of some of Calmette's antivenomous serum to the solution of cobra poison.

Stephens and Meyers have shown that cobra poison exercises a hæmolytic action upon blood *in vitro*. After admixture of the poison with antivenomous serum this hæmolytic action was absent. The

necessary precaution of making the solution of the venom with saline solution approximately isotonic with blood serum was taken.

The author's experiments were conducted with the toxin of diphtheria, and one of the constituents of the poison of the Australian tiger snake (*Hoplocephalus curtus*).

The diphtheria toxin was prepared by cultivating the organisms in broth made from well-hung beef. It was filtered through a Pasteur-Chamberland filter, and the toxin strength of the filtrate determined by injection into a series of guinea-pigs.

The constituent of the venom used was the one which is not destroyed by heating a solution of venom to 90° C. This constituent resembles most closely, if indeed it be not identical with, the principal constituent of cobra poison. Calmette's antivenomous serum possesses a small but decided counteracting action upon it.

The authors endeavoured at the outset to determine whether the action of antitoxins upon toxins were chemical or physiological, by a direct physical method. In 1896 they published an account of a method of separating substances of large molecular size from those of smaller, in solutions containing both. This method was simply by filtering through a film of gelatin, supported in the wall of a Pasteur-Chamberland filter. The filtration was accomplished by a pressure of fifty atmospheres.

A standardised solution of diphtheria toxin was filtered through such a filter. The filtrate was found to contain diphtheria toxin. This filtrate was then tested to ascertain whether it were as toxic as the original solution.

The antitoxin of diphtheria, does not pass through such a filter. When antitoxic serum is filtered through gelatin, the whole of the proteids, and together with them all antitoxic virtue, are absent from the filtrate. As the toxin is not held back by the filter, whereas the antitoxin is, one is provided with a simple physical means of separating them, provided they have not reacted upon one another.

The authors mixed a solution of toxin containing eight fatal doses per kilogramme of guinea-pig in each c.cm., with sufficient Behring's antitoxin to more than completely neutralise all the toxin. This mixture was allowed to remain in contact at 30° C. for two hours, and then filtered through the gelatin filter. Varying quantities of the filtrate were injected into guinea-pigs up to nearly 4 c.cm. per kilogramme of body weight, that is, a quantity originally containing thirty-two fatal doses. The filtrate was quite innocent. The guinea-pigs suffered no inconvenience, and gained weight while under observation in small cages. The injections produced no local œdema.

If the toxin had remained unaffected beside the antitoxin there was nothing to prevent it passing through the filter in virtue of its relatively small molecular size. As, however, it did not do so, we can only conclude that it had entered into some sort of chemical relationship with the relatively large molecules of the antitoxin during their sojourn together prior to filtration.

The authors next experimented with snake venom in order to repeat Calmette's observations.

They took a series of rabbits and injected them with mixtures containing one constituent of the venom of hoplocephalus curtus and Calmette's antivenomous serum. It was found that 2 c.cm. of this sample of serum was sufficient to counteract an amount of the poison contained in 0·002 g. of the dried venom. This amount killed control rabbits in about eight hours.

In some of the experiments this amount of venom and serum was allowed to remain in contact for fifteen minutes at 21° C., and then heated to 68° C. for ten minutes to destroy the antitoxin. In Calmette's experiments the rabbits injected with this heated mixture died, whereas the controls injected with the mixture which had not been heated lived. From this he concluded that the serum and venom were merely existing side by side, and had not reacted upon one another. In our experiments, on the contrary, the rabbits injected with the heated and unheated mixtures of venom and serum alike lived, nor did any of them suffer from symptoms such as loss of appetite, loss of weight, or diminished temperature. The only conclusion to be drawn from these experiments is that during the time which elapsed between the mixture of the venom and serum the latter had acted upon the former, so that there was no longer a fatal dose of venom present.

These results, while they lead to results in entire agreement with those drawn from the filtration experiments with diphtheria toxin and antitoxin, are diametrically opposed to the results obtained by Calmette. As the experiments are so simple as not to leave any possibility of experimental error, the authors turned their attention to any existing difference in the conditions under which Calmette and ourselves worked. As previously pointed out, Calmette absolutely neglected the possible influence of time, temperature, and the relative proportions of the active masses of the toxin and antitoxin present in his mixture. The authors have investigated the value of the factors, time and proportion of active masses, and have shown that these are most important. By altering either the one or the other they produced results which, if these factors be neglected, would lead to diametrically opposite conclusions.

The toxin and antitoxin of this venom are both of great molecular size and complexity. The former is a deutero-albumose and the latter probably a globulin, or at any rate its molecular size is of the same order. *A priori* one would expect the velocity coefficient of any reaction between such complex molecules to be a high one, and in addition, from their great molecular weight, the solution will contain relatively few molecules: so that it is not surprising that any chemical operation in which they are concerned should occupy a very appreciable time.

Ehrlich's[4] views upon the reaction of toxin and antitoxin must be regarded as very weighty. He unhesitatingly declares, in opposition to Buchner and many others, that the toxin-antitoxin reaction is a chemical one. It has already been chemically shown that in the ricin-antiricin reaction one molecule of the antiricin combines with a definite unchangeable quantity of toxin, the process being analogous to the formation of the double salts. Ehrlich found that the toxin-antitoxin reactions take place much more actively when brought together in concentrated solution. He also observed that heat accelerated and that cold retarded the union.

Emmerich and Löw[5] have given some very suggestive thoughts concerning the action of antitoxin by declaring that its virtue resides in a bacteriolytic enzyme which, while chiefly operative in dissolving bacteria, is also capable of disintegrating the toxin. In the development of their theory many interesting, well-known facts are brought out. They recall the peculiar behaviour of cultures of bacillus pyocyaneus in bouillon and call attention to the pellicle formation, the sedimentation of the bacteria when growth ceases, and their ultimate transformation into a gelatinous mass. The question of the causation of bacterial growth is considered, and the observations on that growth does not cease because the nutrient is exhausted, nor because the excrementitious acid or alkali accumulations are sufficient, for when these are neutralised the bacteria do not always continue active growth. The conclusion is that by their growth an enzyme forms which brings about their solution, at first slowly, then as rapidly as they form, and, finally, more rapidly than they can develop. The enzyme seems to develop late. Old cultures of the bacillus pyocyaneus exerted a destructive influence upon the bacillus anthracis.

The writers succeeded in separating the enzyme of the bacillus pyocyaneus in a pure state, and found that in rather concentrated condition it readily dissolved large numbers of anthrax and other bacilli. Injected into rabbits, together with anthrax bacilli, it protected the rabbits; into guinea-pigs, together with diphtheria bacilli, it pro-

tected the guinea-pigs. It was also destructive in its action upon diphtheria toxin, and was capable of affording protection to animals when injected alone some time before infection and intoxication.

Emmerich and Löw regard the antitoxins as serums rich in enzymes, and point out that in all the cultures used to immunise the animals furnishing antitoxin both toxin and enzyme is present. According to their view the toxin is destroyed in the body with much difficulty while the enzyme slowly accumulates, and ultimately sufficient enzyme is contained in the serum to make it useful for protection and treatment. When antitoxic serum is used for treatment the virtue resides entirely in the enzyme, which dissolves the bacteria producing the disease and destroys the toxin present in the blood.

A very important point has been raised as to the possibility of conferring by antitoxic treatment an immunity against certain mineral poisons, and observations which have been made in this direction, if not conclusive, are certainly suggestive. If protection could be afforded against chronic lead poisoning it would be a great boon to workers in many dangerous occupations.

Buredka[6] has succeeded in developing in animals immunised to arsenic a protecti e body which he calls *antiarsenine*. It is non-dialysable and, hence, not a product of the arsenic itself. He believes that its protective power resides in its ability to influence the leucocytes, as when he suppressed their activity its power was lost.

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Radiography in 1899.

By R. NORRIS WOLFENDEN, M.D., Cantab.

Progress in X-ray work during the last year has been chiefly in the direction of improving the methods of interrupting the current with the object of displacing the old and well-known hammer break of the ordinary induction coil ; the devising of more portable apparatus, especially for use in military surgery in the field ; and the application of the Wimshurst machine for the excitation of X-ray tubes. In therapeutics there seems to be little new.

Interrupters.—There has been considerable discussion over the "Wehnelt" break, which is founded upon the principle that if a current is sent through an electrolyte by means of two electrodes of unequal surface, the current becomes rapidly intermittent. The instrument (*Fig.* 1) consists of a glass cell with a negative electrode of lead, the positive

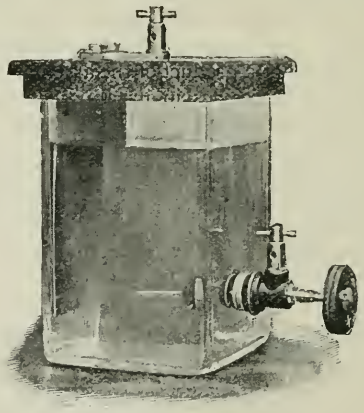

Fig. 1

pole being platinum wire ; a solution of sulphuric acid and water, 1 in 5, being employed. The current causes the platinum wire to become white-hot, and a layer of gas which forms round the electrode causes an insulating film which interrupts the current. As it condenses, the current is re-established, and the process is repeated. It is stated that by modifying the number of active electrodes the length, frequency, and thickness of the spark can be varied, photographs can be

obtained with very short exposures, and deep-seated structures be examined more easily by the greater brilliance and steadiness of the light on the fluorescent screen.[1] The lowest E. M. F. at which this break will work is 12 to 25 volts, but it requires a voltage of 100 or more. It is, therefore, only suitable for those who have a supply from town mains. Moreover, it soon "fatigues," due to the presence of gas round the electrodes, but this difficulty may, perhaps, be got over. There is great danger to tubes, "soft ones" breaking down at once by the fusing of the anticathode. The experimental trials with this interrupter are of great interest, and there is no doubt that it is capable of producing fine effects, but however interesting to the expert, it is scarcely advisable, at any rate, yet, for the average worker to discard his hammer break, or older mercury or other interrupter for the "Wehnelt." If using constantly it would be necessary to have a new one very frequently. The Caldwell Electrolytic Interrupter is spoken of by some workers as even superior to the Wehnelt, but both are unreliable.

Military X-ray Work.—The work done by Battersby in the Soudan and by Beevor in the Indian Campaigns has apparently impressed reluctant authorities with the importance of X-ray outfit in the field, and the wounded in the present Transvaal War are to have the benefits of this means of diagnosis. Battersby states that after the battle of Omdurman there were twenty-one cases out of one hundred and twenty-one in which the bullet could not be detected by ordinary means, but in twenty cases an accurate diagnosis was made by the X-rays, the remaining case being too ill for examination. It is satisfactory to note that the Senior Medical Officer in charge reported that "The Roentgen rays proved of invaluable assistance in localising the exact position of bullets, and in many instances rendered probing of wounds unnecessary."[2] In this campaign an ingenious device was used to charge accumulator cells, a small dynamo driven by a tandem bicycle answering admirably to charge eight separate E.P.S. cells used with 10 inch coils. This device may commend itself to workers in out-of-the-way places, away from electric supply stations. In Beevor's case the X-ray work was done in cold climates amongst the mountains, in Battersby's in the heat of the Soudan, thus proving that if certain conditions are followed extremes of climate are no barrier to successful X-ray work.

Influence Machines in X-ray Work.—Opinion is still much divided as to the practicability of the Wimshurst machine as regards X-ray work. So far, there is no reason to think that it is likely to supplant the ordinary coil. Something might be gained in portability and the dispensing of primary or secondary batteries by the use of an

influence machine to excite the X-ray tube, but up to the present few constant workers in radiography would be disposed to substitute influence machines for induction coils. Heber Robarts (the editor of the "American X-ray Journal") states that a two-plate machine is of no use for X-ray work; a four-plate machine will do for the examination of the extremities; a six-plate machine with plates of 30 inches diameter will give good views of the trunk; an eight-plate machine will exhibit the hip-joint, and the heart, and any portion of the body can be radiographed. With a machine of ten plates a good view of the heart may be obtained 15 to 20 feet away from the tube; of the bones of the hand, 50 feet away; of the head of the femur, 4 to 6 feet away; of the large vessels and glandular organs, plainly; and of pathological processes, such as hypertrophy, atrophy, induration, abscesses, either in the brain or trunk.

It is common to recommend the use of Leyden jars with influence machines, but Robarts affirms they are never necessary. To get the best effect the positive pole may be interrupted by attaching the conducting wire to an independent stand with the end of the wire separated from the positive pole of the machine about an inch. According to Robarts, the machine should be kept air-tight in a large, dry and empty room. The axles should have ball bearings, and 10 lbs. of calcium chloride, dried and put in a cheese cloth, should be kept inside the case, to be renewed when necessary.

Most intending workers, we imagine, will opine that a 10-inch spark coil, even with secondary batteries, is a less troublesome affair than this influence machine. But all this is not at all necessary. A Wimshurst machine made with plates rotating in opposite directions, and with metal sectors (the form introduced by Mr. Wimshurst in 1888), may be kept in any room, in any atmosphere, and without any covering but a piece of American cloth when not in actual use, and is at all times available. One standing in my workroom in the damp atmosphere of the seaside, and without any particular attention except occasional dusting, is at all times self-exciting. The chief advantage of these machines is that the current is immediately produced on turning the handle, illumination of the focus tube is easily obtained, and a beautifully steady light is produced on the fluorescent screen. As to portability there is probably little advantage over an induction coil, taking into account the risk of breakages of the ebonite or glass plates, etc., and a good machine is nearly as expensive as the smaller sizes of induction coils.

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Part II.—NEW TREATMENT.

The Dictionary of New Treatment in Medicine and Surgery, 1900.

ABDOMEN (Surgery of). (See also "Appendicitis," and "Pancreas.")
Priestley Leech, M.D., F.R.C.S.

Causes of Death after Cœliotomy.—Dr. W. J. Smyly[1] read a paper on this subject, and enumerates the following causes of death more or less due to abdominal conditions: (*a*,) Shock; (*b*,) Hæmorrhage; (*c*,) Ileus; (*d*,) Uræmia; (*e*,) Inanition; (*f*,) Tetanus; (*g*,) Embolism; (*h*,) Sepsis. He thought that the larger number of cases reported as deaths from shock had been due to loss of blood during or after operation. Late or secondary shock had been described, but he had never seen it, and was inclined to attribute death in such cases as had been recorded to secondary hæmorrhage, sepsis, or the giving way of sutured viscera, especially intestine. He thought peritonitis was not always due to sepsis, but that traumatic or plastic peritonitis might occur, especially when the intestines had been much exposed and handled. J. W. Taylor, of Birmingham, in the discussion which followed Dr. Smyly's paper, said the three chief factors in the production of sepsis were sponges, hands, and the breath of the operator. He believed in the value of calomel after operation. Another way of combating sepsis, where the kidneys were acting badly, was by means of the hot air bath.

Milian[2] writes on the *Defensive mobility of the great omentum*. The omentum is very movable; it is mobile upwards, downwards, in a transverse direction, and upon itself, and this mobility is not regulated by the laws of gravity. It is difficult to discover the agent of this mobility, as there are neither striated nor non-striated muscular fibres in the omentum. It cleans the abdominal cavity and is in constant movement; it acts as a net to catch foreign bodies, and it has a great tendency to adhere to wounds and abrasions in the abdomen. It has a great tendency to move towards any inflammatory focus, and thus limits different purulent collections. In appendicitis it acts favourably by limiting purulent collections, and, on the other hand, it may itself become inflamed and infected.

Bird[3] has an interesting paper on *Abdominal tumours simulating malignant disease.* Four cases he describes are worth noting. In one, a man, after a Bassini operation for hernia, in which the omentum was tied with silk, a painful lump developed to the right and below the umbilicus; it was freely movable, somewhat tender and hard. On opening the abdomen, what looked like a carcinomatous mass involving a portion of the ascending colon, cæcum, and portion of ileum was found, and on investigation the growth was found to be inflammatory, and had as its nucleus a small chamber filled with a drop or two of clear amber fluid bathing the silk ligature, which had been applied to the omentum. Another patient, a woman, had had an operation for umbilical hernia when a piece of omentum was ligatured with silk. Three months later she was again admitted for severe abdominal pain and threatening obstruction with a good loss of weight. On opening the abdomen a great many adhesions were found, and a nodule the size of a cherry was found joining three loops of bowel together; in the centre of the nodule was found a silk knot. The other two cases were apparently sarcomata growing into the abdominal wall; both yielded to antisyphilitic treatment, and both patients regained their health and strength and regained weight they had lost. There were no other signs of syphilis; one patient was a man, the other a child.

Stanmore Bishop[4] has used **Celloidin Dissolved in Alcohol and Ether** as suggested by Mackenzie and Williamson (*Vide* "Med. Ann.," 1897, p. 602), for protecting abdominal wounds. The celloidin solution (2 parts to 15 of absolute alcohol and 15 parts of pure ether sp. gr. 720), is painted over the line of incision, and no other dressing is used.

Allingham[5] reports a case where the abdomen was opened three times in a fortnight. The patient, a woman was operated for double pyo-salpingitis; both ovaries and tubes were removed, the omentum and intestines being separated from the ovary and tube. The patient did well for four days when vomiting began again, the abdomen was distended, and she complained of great pain. The abdomen was opened when it was found that the stump of the omentum had become adherent to a loop of intestine, kinking it and causing obstruction; the omentum was freed and the patient did well for a week. Symptoms of obstruction occurred again; the abdomen was opened for a third time, when the stump of the omentum was found again adherent to the intestine; this was freed, and to prevent a future adhesion the stump of the omentum was fixed in the upper angle of the wound. The patient made a complete recovery.

Steffens[6] has a lengthy article on multiple laparotomies in the same individual. Notes are given of forty-five cases where laparotomy was

performed on the same patient twice or more. In the greater number of these cases the operation was performed for causes independent of the first laparotomy, for tumours of the same or a different kind. Next in frequency come laparotomies for intestinal fistulæ, and then laparotomy for ileus. From a survey of these cases he finds that where there has been any rise of temperature immediately after the first laparotomy (except where there has been an intercurrent febrile affection, *e.g.*, pneumonia), adhesions have constantly been found at the second laparatomy. In cases, on the other hand, which have recovered without a rise of temperature on a second laparotomy adhesions were uniformly absent. He concludes that, as shown by experiments on animals, neither blood coagula, nor irritation of antiseptic solutions, nor ligatures cause adhesions, but that they arise from a more or less extensive peritonitis due to a slight septic wound healing, insufficient to cause a general but sufficient to cause a local infection of slight virulence. There are three causes which Steffens says are mainly responsible for peritoneal adhesions. They are : (1,) Infectious peritonitis ; (2,) Wounds of the serosa ; (3,) Deficient intestinal peristalsis. To avoid or minimise the dangers due to the first two causes, we must handle as little as possible the abdominal organs, especially the intestinal serosa ; the Trendelenburg position is also useful for this purpose, although this alone will not prevent adhesions. All unnecessarily energetic toilet of the peritoneum, and the use of strong antiseptic solutions must also be avoided ; cover stumps and all raw surfaces as far as possible with peritoneum. To avoid deficient intestinal paralysis do not give opium, and get the bowels moved easily except in cases of intestinal resection.

REFERENCES.—[1] "Brit. Med. Journ.," May 6, 1899, p. 1096, and "Lancet," April 29, 1899, p. 1160 ; [2] "Gaz. des Hôp.," July 1, 1899, No. 74, p. 681 ; [3] "Inter-Colonial Med. Journ. of Australasia," Oct. 26, 1898 ; [4] "Med. Press and Circ.," Aug. 31, 1898 ; [5] "Med. Press," Oct. 19, 1898, p. 409 ; [6] "Beiträge z. klin. Chir.," Band xxiii, Heft. 2.

ACNE.

T. Colcott Fox, M.B.

An interesting discussion was opened at the German Dermatological Congress, in June, 1898, by Touton and Veiel, and the many speakers give us a good idea of the drift of opinion on the etiology and treatment of acne. Touton pointed out that the hair follicle, with its sebaceous gland and the related surrounding vascular connective tissue, constitutes an anatomo-pathological unit ; but in some regions the hair follicle predominates, in others the sebaceous gland. It is often difficult to assign the degree in which the different portions of this unit are involved in various regions of the body, and impossible

and little important to establish an exact limit between folliculitis and perifolliculitis. Further and more important, we often cannot decide if the lumen of the pilo-sebaceous follicle is primitively involved by external agencies, or if the surrounding blood-vessels are first attacked by a noxious agent coming from the interior. The great genus *Folliculitis* includes two groups: Firstly, the *Acnes* are "inflammatory affections, with a tendency to suppuration of the pilo-sebaceous follicle and a preponderating participation of the sebaceous glands; affections of which the individual elements run an acute course"; arising chiefly in regions possessing lanugo-hairs; Secondly, there are the analogous *Folliculites* proper, which arise rather in hairy regions and in which the hair follicle is more particularly attacked.

In the *acne group* Touton includes, with acne vulgaris, only the Iodic and Bromic Acnes, which it is supposed arise from contaminated blood rather than in the process of elimination of the drugs by way of the sebaceous glands. So, too, we may recognise an acne from tar and its products, from arsenic, in filers and jute spinners, from paraffin, carriage grease, petroleum, vaseline and other heavy mineral oils, cod-liver oil, chrysarobin, pyrogallol, chlorine (Herxheimer), and phenacetin (Neisser).

The etiology of *Acne vulgaris* is very interesting and still obscure. The chief cause, he thinks, is an innate disposition of the skin, of unknown nature, which expresses itself during the augmentation of the functions of the pilo-sebaceous apparatus by a disproportion between the production of sebum (oily seborrhœa) and the possibility of its elimination, and by an augmentation of the coherency of the corneous layers of the pilo-sebaceous orifices (comedones). Schutz supposes a reflex nervous hypersecretion. Alteration of the quality of the sebum and relaxation of the arrector muscles are hypothetical data. The coil glands may participate, but the oily seborrhœa is chiefly due to the sebaceous glands. The secondary inflammatory changes (papules, phlegmons) are probably due to an organised agent from without, though presumably not a specific one as the lesions are so various. He attaches no importance to the bacillus of Unna-Hodara, to Lomry's white pyogenic staphylococcus, and thinks Sabouraud's seborrhœic micro-bacillus contestable as a cause. Given the predisposition, certain occasional, external and internal causes may originate acne, such as heat rays, mechanical irritations, atmospherical impurities, chlorosis, reflex influences from the genito-urinary system, intestinal troubles, constipation, stomach dilatation.

Other speakers attributed the eruption to an enlargement of the neck of the follicle and relaxation of the follicular wall (Isaac);

nervous hypersecretion and relaxation of the follicular walls (Hammer); blocking of the follicle with dead lanugo hairs, with subsequent enlargement and increased functional activity of the glands (Behrend); an anomaly of growth under the dependence of a diminution of tonicity and innervation of the vessels (Kaposi). Neisser insists on the possibility of acne being produced by the circulation of products absorbed from the intestines. Veiel insists on the value of bactericide treatment. There is no specific internally, he thinks. Diet must be regulated according to peculiarities and temperament. He expels comedones and applies **Mercurial Plasters** followed by **Zinc Plaster**, and then **Sulphur Preparations**, which can be used from the outset for out-patients. Desquamative pastes can be used where mercurial plasters are impracticable. He condemns scraping, and fears massage may spread infection. He never touches the spots with carbolic acid or sublimate. Salicylic acid dries the skin, and prevents the expulsion of comedones. **Milk of Sulphur, Alcohol**, and **Water** in equal parts, with 10 per cent. of **Gum Mucilage**, is a good local application used night and morning. **Dry Sulphur Powder** is preferable to sulphur ointments. Isaac on the other hand scarifies, opens pustules, and applies desquamative pastes of **Sulphur, Naphthol, Green Soap, Resorcin.** Max Joseph does not like desquamative pastes, but sulphur and salicylic pastes are well borne. He thinks well of **Menthol** internally. Barlow has employed massage without effect. He recommends patients to enter a dry stove, and after a hot douche to take a **Vapour Bath** and wash with soap several times. Then a cold douche is given, and finally the patient is soaped again. Neisser holds that account must be taken of the state of the general health, and dieting is necessary. Desquamative pastes are not well borne by the anæmic.

Saalfeld[1] uses a special apparatus for the combination of the **Steam and Alcoholic Soap** treatments of acne. The apparatus consists of a funnel with double walls large enough to admit the face. The interval between the two walls of the funnel is filled with hot water: an outer coat of asbestos surrounds the funnel, except at the lower part, which is heated by a spirit lamp. The apex of the funnel leads to a steam inhaler, in which the alkaline alcoholic solution of soap is placed. The patient places his face in the funnel, and the steam and soap solution acts on the skin. The temperature is regulated by a thermometer on the top of the funnel. A temperature of 55° C. on this thermometer indicates 44° C. inside the funnel, and this is easily borne. The treatment is applied daily for periods of five to fifteen minutes.

Lastly, we may refer our readers to descriptions of two peculiar

eruptions, viz., *Acne keratosa*, by Radcliffe-Crocker,[2] and *Acne urticata*, by Lowenbach.[3]

REFERENCES.—[1] "Therap. Monats.," Oct., 1898; [2] "Brit. Journ. of Derm.," vol. xi, Jan. 1899, p. 1, and April, p. 155; [3] "Arch. f. Derm. u. Syph.," xlix, Heft. i, 1899, p. 29, Plate I.

ADDISON'S DISEASE. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

The pathogenesis of Addison's disease remains obscure, and engages a good deal of attention. The toxic symptoms seem fairly attributable to the suppression of the function of the gland, as extirpation of both glands in animals is followed by weakness, drowsiness, convulsions, and death. Auld[1] believes that the medulla is the essential part of the gland, and that it secretes a specific substance which is destroyed slowly by the circulating blood, more rapidly by the liver. In his experiments he did not observe any compensatory enlargement of the gland on the opposite side after excision of a single organ, such as has been noted by Simmonds[2] after experimental removal, and also in the case of a man, one of whose supra-renals had undergone atrophy from tuberculosis. On the other hand, Auld found great hypertrophy of the thymus and considerable enlargement of the spleen. Chauffard[3] in a published clinical lecture does not admit that the suppression of the glandular function is adequate to account for either the pigmentation or the gastro-intestinal troubles, and he invokes the participation of the periglandular capsule and the neighbouring sympathetic nerve ganglia.

Dezirot[4] has draw attention to the relative frequency of Addison's disease in childhood; he has observed three cases himself, and has collected forty-eight published examples in children of ages ranging from seven days to fourteen-and-a-half years. Weakness and fatigue with gastro-intestinal symptoms, nausea, vomiting, diarrhœa, and constipation generally ushered in the disease. Localised tuberculosis in lungs, bones, glands, etc., was not infrequent. Pigmentation of the skin occurred later and was generally uniform, with brown spots upon the mucous membrane. Death usually took place within a year.

Malignant growths of the suprarenal capsules are not often liable to be confounded with Addison's disease, because the lesion is as a rule one-sided, and only partially destroys the pair of glands. It simulates more closely the aspect of renal tumour. Rolleston[5] and Marks have collected a number of cases which justify them in the assertion that the typical clinical picture of Addison's disease is at most only partially and imperfectly suggested.

The failure of the circulation in Addison's disease is well known, and is due to fatty degeneration of the muscular wall of the left

ventricle. In a case under the care of Dr. Charlewood Turner[6] the blood pressure was measured two days before death by Hill and Barnard's sphygmometer, and was found to equal only 73 millimètres of mercury, the normal pressure being between 120 and 125 millimètres.

Treatment by administration of suprarenal extract either in the form of tabloids (Foster[7]), or glycerin extract (Turner[8]), by the mouth or in solution (Chauffard[9]) hypodermically, failed in each instance. Auld[10] has suggested the use of **Thymus** on account of the hypertrophy of this gland observed in the animals in which he practised unilateral excision of a capsule. This suggestion has not so far as we know been tried by anyone, but is deserving of attention in view of the incurability of the disease by every means known to us.

REFERENCES.—[1] "Brit Med. Journ.," June 3, 1899; [2] "Virchow's Archiv.," cliii, p. 138; [3] "Méd. Press and Circ.," June 7, 1899; [4] "Klintherap. Wochenschr.," Sept. 18, 1893; [5] "Amer. Journ. Med. Sci.," Oct., 1898; [6] "Lancet," June 10, 1899; [7] Ibid., Jan. 10, 1899; [8] loc. cit; [9] loc, cit.; [10] loc. cit.

ADENOIDS. (See "Nose.")

ALBUMINURIA. (See "Bright's Disease.")

ALCOHOLISM. *Græme M. Hammond, M.D., New York.*

Federoff[1] has used **Strychnine** in the treatment of twelve cases of alcoholism. He believes by this means the catarrhal processes associated with this condition are rapidly ameliorated, and that neurasthenic tendencies are favourably influenced. Thus insomnia and other grave nervous symptoms rapidly disappear, the strychnine seeming to produce sleep, so that the patients rested an ordinary length of time for five or six days. The restlessness and pains of which they complained were also relieved. To this extent he considers strychnine a cure for the alcohol habit, but does not think it has any definite specific influence.

REFERENCE.—[1] "Therap. Gaz.," Nov. 15, 1898.

ALOPECIA. *T. Colcott Fox, M.B.*

The following is Balzer's[1] treatment of *Alopecia areata* :—

(1,) Render the head generally antiseptic by applying several times daily **Van Swieten's Liquor**, pure or diluted one-half. This proceeding is also useful for some time after the apparent cure of the case.

(2,) Every morning, after the application just mentioned, the head, and especially the denuded areas, are rubbed with the **Lotion excitante de Saint-Louis,** viz. :—

℞ Alcool Camphré	grms. cxxv	Ammoniaque Liquide	grms. v
Ess. de Térébinthine	grms. xxv		

And at night the following ointment is applied :—

℞ Bioxyde jaune d'Hydrargyre	grms. ij	Huile de Cade	grms. xv
Fleur de Soufre	grms. iv	Vaseline	grms. xxx

or **Calomel**, or **Yellow Oxide Ointment**, or **Sulphur** (1 in 10).

(3,) Nevertheless, experience proves that after a time medicaments may lose their effect, and others should be substituted—*e.g.*, the **Acetic Lotion of Besmer** :—

℞ Crystallised Acetic Acid	grm. j	Sulphuric Ether	grms. xxx
Hydrate of Chloral	grms. iv		

Essence of Winter-Green, Iodised Vaseline, Phenicated Oil (to 50th), **Tincture of Iodine, Traumaticine of Chrysarobin** (1 in 10).

Dr. E. C. Williams[2] exhibited a child with chronic alopecia, who had been treated with blisters and thyroid extract without benefit. After five months' treatment with the **Oxygen Cap** the hair grew rapidly.

At the same meeting Dr. Harrison called attention to the good effects of **Pilocarpine** ($\frac{1}{15}$ grain t.d.s.), internally and also externally. Pringle[3] also mentions a case of total baldness, which resisted treatment by iodine, shaving, antiseptic lotions, and electricity, but responded at once to local hypodermic injections of $\frac{1}{6}$ grain (increased to $\frac{1}{3}$) of **Nitrate of Pilocarpine**. Pringle mentions other successful cases.

Jacquet, starting with the premiss that permanent cutaneous irritation is not so effective as slight renewed irritation, claims good results from **Repeated Beatings and Puncturing of Patches with a Brush** (horse-hair, pigs' bristles, or wire), rendered aseptic from dipping in an antiseptic oil miscible with cutaneous fats. Sabouraud objected to Jacquet's theory that this treatment was really complex, and that erroneous conclusions might readily be formed, because alopecia of the beard responded more readily to treatment after about a year's duration. At the same meeting of the French Society of Dermatology, Balzer mentioned that he had been trying Richema's treatment by vigorous friction with an aqueous or alcoholic 15 to 30 solution of **Lactic Acid**, and was very well satisfied with the results.

Jersild[4] has employed **Finsen's Phototherapeutic Method**, and claims that by it the duration of the necessary treatment is much shortened.

MacGowan[5] recommends **Trikresol** as a local application.

For *Syphilitic Alopecia* Gaucher[6] recommends the following lotion to be frequently applied :—

℞ Corrosive Sublimate	3	Castor Oil	15
Chloral Hydrate	60	Alcohol	3000
Resorcin	30		

Brocq[7] deals with the *Principles of treatment of alopecias consecutive to general morbid states*, and mentions a number of useful preparations. The gist of the article is that one applies **Exciting Alcoholic Lotions** composed of rum, brandy, camphorated alcohol, and so on, aromatised with aqua mellis, spirit of rosemary and such like. With this is incorporated **Quinine, Nux Vomica, Pilocarpine,** or **Tincture of Jaborandi**; stimulants like capsicum, cantharides, and chloral, and stimulating **Parasiticides** like formal and sublimate. If the addition of some **Fatty Matter** is called for a little castor oil dissolved in the spirit, or some glycerin, may be added, or the more disagreeable pomade may be used.

As a contribution to the etiology of Alopecia areata, it may be noted that Bender[8] described another case following an operation about the neck.

REFERENCES.—[1] "Journ. de méd. et de chir. prat.," Jan. 25, 1898; [2] "Bristol Med. Chir. Soc.," Dec. 14, 1898; [3] "Brit. Journ. of Derm.," June, 1898; [4] "Ann. de Derm. et de Syph.," Jan., 1899; [5] "Journ. Cut. and Gen-urin. Dis.," May, 1899, p. 217; [6] "Journ. des Praticiens," April 1, 1899; [7] "Le Bull. méd.," March 13, 1899; [8] "Derm. Centralb.," No. 1, 1898, p. 1.

ANÆMIA OF INFANCY. *Henry Dwight Chapin, M.D., New York.*

Dr. John L. Morse[1] considers a classification of the anæmias of infancy. The blood of infants under two years normally differs in certain of its characteristics from that of adults. The hæmoglobin, although relatively high for a few weeks after birth, is, during the rest of childhood, relatively low. The number of red corpuscles is about the same or a little larger than in adults, averaging a little over 5,000,000 per cubic millimètre. During the first weeks of life there is more or less variation in the size and shape of the red cells, and nucleated forms are not very unusual. The number of white corpuscles per cubic millimètre is somewhat larger than in adults, averaging from 10,000 to 12,000. The relative proportions of the various forms of leucocytes are also considerably different. The limits, as given by Gundobin, are as follows:—

Small mononuclear	50 per cent. to 70 per cent.
Large mononuclear	6 „ „ „ 14 „ „
Polynuclear neutrophiles	28 „ „ „ 40 „ „
Eosinophiles	1 „ „ „ 10 „ „

Blood changes develop more easily and more frequently as the result of various morbid conditions and diseases in children than in adults. All the changes seen in the blood of adults as the result of disease are exaggerated in infancy. The tendency is always to revert

to a younger or to the fœtal type of blood. All forms of blood disease in infancy are apt to be associated with splenic enlargement.

In the light of our present knowledge a very simple classification is alone justifiable. The following modification of Monti's is a fairly satisfactory one :—

Secondary.—Mild anæmia ; mild anæmia with leucocytosis ; severe anæmia ; severe anæmia with leucocytosis.

Primary.—Pernicious ; leukæmia.

In all of these forms there may be greater or less splenic enlargement. Splenic tumour, therefore, is of little or no aid in the differential diagnosis of the anæmias of infancy.

REFERENCE.—[1] "Arch. Ped.," vol. xv, No. 11, 1898.

ANÆSTHESIA. *H. Bellamy Gardner, M.R.C.S., Eng.*

The need for an examination in anæsthetics as part of the final test for the diplomas of the colleges and the degrees of the universities in the United Kingdom has not so far been acknowledged by those bodies. Year by year many men become qualified to practise medicine and surgery without ever having attended a lecture on the subject or personally administered an anæsthetic. I have not the slightest hesitation in saying that this fact is the cause of a very large number of the fatalities which occur annually under the influence of the narcotic vapours.

It can never be too firmly insisted upon that the pouring out of a certain quantity, more or less, of a liquid upon lint, and holding it near a patient's face is not, and never can be, a safe and skilful administration of an anæsthetic. It is quite possible that in a few cases such a procedure might, by good fortune, be unattended with any obviously bad result ; but a practical knowledge of the varied rhythm displayed by the respiration under nitrous oxide, ether, and chloroform, with the exact import of every change in its character ; of the many kinds of obstruction to efficient oxidation which may arise ; of the mechanical effects of posture upon the circulation, and of the impediments which certain positions of the body present to the free movement of the diaphragm, thorax, and abdomen ; the recognition of the absolute necessity for mouth-gag, tongue-forceps and tracheotomy instruments being at hand during every general anæthesia, for whatever purpose, however trivial, it may be undertaken ; these, with unremitting attention to the symptoms exhibited by the patient, and the instant elimination of asphyxial elements as they arise, are absolutely necessary factors in the making of a skilled administrator.

But, above all, personal practice in giving ether, chloroform, and nitrous oxide should be regarded by the student himself as an indispensable portion of his medical equipment.

What is he to do when, for the first time after qualification he is left to his own resources to administer one of the most lethal drugs in the pharmacopœia? Dosage by measured quantities of the anæsthetic will not help him, for, unfortunately, clinging to such an anchor is the hope of a theoretical, not a practical anæsthetist.

The difficulties which arise in anæsthesia and during the passage into that state are not extrinsic, but intrinsic to the patient's system.

The mechanics of the individual respiratory apparatus under our care must be made the one absorbing study in giving an anæsthetic. If the writer were asked what should be considered the most important clinical feature to observe in a patient under an anæsthetic? he would answer: "Respiration." And the next in importance? "Respiration." And the next to that? "Respiration."

The reason for this insistance would be broadly based upon the fact that any vapour or gas inspired by the human being is most likely to produce a primary effect upon the larynx, lungs, and respiration. Either alteration in rhythm, shallowness, irregularity, voluntary or involuntary cessation of this latter act may result from the presence of the respired gas or vapour in the air-sacs; but, in addition to this, at present we do not entertain the idea that either nitrous oxide or ether gives up oxygen to the blood—chloroform, of course, does not contain oxygen—and, believing that these narcotics are eliminated again, for the greater part, unchanged by their passage through the system, we must acknowledge that the admission of either of these three anæsthetics to the inspired air, lungs, and blood must exclude to some degree a portion of oxygen which would otherwise have been absorbed.

Apart, therefore, from the grosser mechanical obstructions to free aëration during anæsthesia, there must always be some deprivation of oxygen, varying in degree from a number of causes, but nevertheless likely to produce an effect first noticeable by a change in the manner of respiration, which indicates to the practised administrator, no less clearly than the barometer to the aëronaut, the approach of a respiratory embarrassment due to inadequate supply of oxygen.

The student's ear is carefully trained to differentiate sounds produced within the chest. What is needed in clinical work and in anæsthetic administration is the power of instantly recognising by the tone and timbre of a patient's respiration what degree of obstruction exists to the entry of air; what degree of vitality is present in the cerebral centres; what amount of mucus has collected in the respiratory tract, and exactly where such mucus is situated.

How can such diagnostic power be attained except by experience?

How can such experience be had except by constant, careful, personal practice in administration? Of what inestimable value in medical diagnosis is the handling of patients! That close contact with them, that observation and intimate intuition of their impending nervous, respiratory, and circulatory changes which is afforded the student by training in anæsthetics can hardly be excelled in imparting the confidence which will be of mutual benefit both to the doctor and to his charge.

Turning now to the work in anæsthetics which has been accomplished during the past year: —

Nitrous Oxide Gas, and its administration by means of what is termed an open inhaler, has received the attention of Dr. George B. Flux, in a paper read by him at the Society of Anæsthetists, on February 17th, 1899.[1]

He stated that the objects of the method were: —

(1,) To save the patient from the discomforts of the accurately-fitting air-excluding face-piece.

(2,) To enable the patient to breathe gas at the atmospheric pressure.

(3,) To maintain free access of air to the patient.

(4,) To admit the gas *to* the inspired air only in such amount as circumstances may require.

The inhaler he advocated was a cup-shaped celluloid mask open at the top; two forms were employed, the ordinary one for a patient lying down, and another with the side open for the admission of the patient's face and chin in the sitting posture.

It cannot be said that the results obtained by the use of this method were at all uniformly satisfactory.

The idea that nitrous oxide can be *added to* air as an anæsthetic—thereby presupposing that less than 50 per cent. of this "gas" will produce anæsthesia, when mixed with air—is quite erroneous.

The present writer had the advantage, in the years 1895-6-7, of assisting Dr. Frederic Hewitt[2] at the Dental Hospital of London with a series of experiments upon this particular point, when, after the most careful administrations of air with nitrous oxide in percentages accurately guaged by a special gasometer, it was found that anæsthesia with nitrous oxide was unattainable in the presence of more than $33\frac{1}{3}$ per cent. of air.

That Dr. Flux's method ever attained anæsthesia at all is due to the fact that nitrous oxide, being heavier than air in the proportion of 1·5 to 1·0, air may even be altogether excluded by the supply of sufficient "gas" to fill the face-piece. It is therefore a fallacy to believe that because the face-piece is open at the top air is always available to the patient.

Dr. W. I. McCardie, of Birmingham, has contributed some excellent work in the direction of prolonging nitrous oxide anæsthesia in dental operations by means of a mouth tube. He uses a tube about the size of an ordinary ovariotomy cannula, through which the gas is briskly passed into the mouth during dental extractions, the nose being closed either by the fingers or by a special clip. The administration is begun in the ordinary manner with a face-piece, till the patient is unconscious. By this means the whole mouth can be cleared of teeth without any pain whatever, in all but the most powerful subjects. These latter, however, seem to require a more profound anæsthesia in order to abrogate any inconvenient reflex movements.[3]

The present writer visited the Birmingham Dental Hospital, in September, 1899, to see the method at work, and was much impressed by the absence of after-effects, which presented a great advantage over ether for country patients who had to travel some distance to their homes.

To deepen the anæsthesia at any time, all that was necessary was to increase the rate of the gas stream flowing into the side of the mouth.

The method is best carried out with the aid of a third person to assist the anæsthetist in holding the tube and moving the mouth gag ; it can, however, with practice, be managed by the dentist and anæsthetist alone.

I now come to speak of what I believe to be a still more suitable method, which, on the initial suggestion of Mr. Alfred Coleman, has been modified and perfected by Dr. Herbert Paterson, assistant anæsthetist to the Dental Hospital of London.

This consists in anæsthetising the patient by means of gas given through a little cap which fits over the nose alone ; two small metal tubes are let into the nose-piece, and to these are attached two rubber tubes which lead to an ordinary gas bag behind the patient's head — a two-way stop-cock intervening.[4] The mouth may be propped open ready for the dentist to work at, and even though some degree of nasal obstruction exists, nose breathing is at once established by passing the gas stream briskly through the nares. The writer has personally been subjected to this method of producing anæsthesia. It will be found that, though a patient may wish to inspire through the mouth, he will voluntarily begin to breathe through his nose when he feels sufficient gas is gaining entrance to his air passages. Even if the patient continue to breathe by the mouth the gas stream will fill that also, and he will "go off" just the same under its influence. The longest period of anæsthesia which Dr. Paterson has produced by this method in

dental work is over nine minutes. From my own observations of the method in Dr. Paterson's hands, I must remark upon the singular fact that the patients, though completely anæsthetic and generally quite tranquil during the extraction of any number of teeth, do not appear to be so deeply influenced by the gas as is usual with the ordinary method; they do not necessarily become at all markedly cyanosed, nor do their pupils dilate; in fact, the eye is often mobile, and the patient presents the appearance more of being drowsy than completely comatose.

When the method has been still further simplified—perhaps by the use of a strong rubber reserve bag controlling the stream of gas with its own elastic pressure—I believe that the solution of the difficult problem which was attempted with only very poor success by Clover and since by others, namely the continuation of gas anæsthesia during dental operations of uncertain duration, will be very much nearer attainment than it has ever been before.

Ether and Chloroform, under the title of "Pure Anæsthetics," were the subject of a learned communication by Professor Ramsay to the Society of Anæsthetists during the last winter session. He recommended that a little metallic mercury should be kept in every anæsthetist's ether bottle in order to precipitate any ethyl peroxide, which will then fall to the bottom of the bottle as a black powder upon the surface of the mercury. To purify chloroform from the presence of carbonyl chloride, which latter renders it harsh and irritating to the respiratory passages, a little slaked lime should be added if the chloroform has to be kept for any length of time. This drug should also be kept in the dark in closely-stoppered bottles, because decomposition is favoured by the action of light and air.

Dr. W. I. McCardie has called attention in a recent number of "Treatment," to the effect of different anæsthetics upon the kidneys. Recording the observations of Dr. R. C. Kemp,[5] of New York, he says:—

Ether produced a special contraction of the renal arterioles, with a consequent damaging effect on the renal secretory cells. The kidney diminished in volume, and with this there were marked albuminuria and suppression of the urinary secretion. It was not due to diminished tension. Ether was therefore contra-indicated in renal disease, and particularly when, with the albuminuria, there was a tendency to pulmonary œdema.

Chloroform seemed to produce no effect on the kidney; the urinary secretion continued up to the last, and the albuminuria was exceedingly slight and transient.

The *A.C.E.* mixture showed the special effect of ether on the

kidneys, and of chloroform on the heart. Dr. Kemp saw no advantage in using this mixture, but rather the reverse.

The present writer recently paid a special visit to Birmingham, Liverpool, Manchester, and Leeds in order to observe the methods of inducing anæsthesia now practised in the Midlands. Ether is the prevalent anæsthetic, and is administered by means of Clover's inhaler. Ormsby's and Allis's inhalers are also in use, but chiefly in Liverpool; whilst the use of gas as an adjuvant to ether is only a routine practice at the Birmingham General Hospital.

The Special Hospitals, owing to the exigencies of their particular work, are slight exceptions to the rule, for the Throat and Ear Hospital in Birmingham uses chloroform almost exclusively, whilst the Women's Hospital relies very largely upon a mixture of ether 2 parts, with chloroform 1 part, given by Clover's inhaler without the bag. This mixture was extensively employed by Mr. Lawson Tait, both in his hospital and private practice for fifteen years. It is stated that it is a very pleasant one for the patient to inhale, and is rarely accompanied by any excitement or struggling during the early stages of anæsthesia.

It is to be hoped that the prevalence of ether in the Midlands will spread to other parts of the United Kingdom, and that the alarming yearly death-roll from the use of chloroform for trivial operations will thus be gradually decreased.

REFERENCES. —[1] "Transact. of Soc. of Anæsthetists," vol. ii, p. 140; [2] "Medico-Chirurgical Transac.," vol. lxxxii,; [3] "Journ. of the Brit. Dental Assoc.," Aug., 1898; [4] "West London Med. Journ.," July, 1899; [5] "New York Med. Rec.," June 10, 1899; [6] "Lancet," Dec. 17, 1898.

ANÆSTHESIA (Local). *Priestley Leech, M.D., F.R.C.S.*

The use of local anæsthetics seems far commoner in Germany than it is with us. In an editorial[1] on this subject the solution which Braun uses is **Eucaine :—**

R	Eucaine β	grns. j	Sodium Chloride	grns. viij
			Distilled Water	f℥ij

This keeps well and can be boiled an indefinite number of times without deteriorating. It should be at about blood heat when injected. He thinks the addition of morphia increases the local irritation and the subsequent œdema, and if it relieves the pain does so by its systemic action and not by its local action. Eucaine is preferable to cocaine, because it is less irritating to the tissues, and hence causes less primary pain; boiling does not alter its composition, and it is not more than one-half as toxic as cocaine. The anæsthetic solution may be employed by infiltration, first of the skin and then of

the deeper tissues; by circumferentiation, *i.e.*, surrounding the area to be operated on by a ring of skin and subcutaneous injections; by regional anæsthesia, *i.e.*, by injections close to the nerve trunk supplying the region to be operated on. The objections to the infiltration method are: It prolongs the operation and alters the tissues that it may be difficult to distinguish between the pathological and normal; the injection is painful if made into an inflamed part, and it may carry pathogenic germs directly into the blood-vessels. It is suited for operations involving the skin, *e.g.*, the removal of papillomata or epitheliomata, or the excision of nails and the removal of sharply circumscribed tumours; vasectomy and suprapubic cystotomy, exploratory laparotomy, tapping of hydroceles, excision of veins and exploration for the removal of foreign bodies. The circumferential method is useful where the surgical procedure is limited to the skin and subcutaneous tissues and in operations on the fingers and toes, the injection being driven into healthy tissue close to the proposed seat of operation and completely surrounding the member, a constricting band being first placed on the proximal side of the area selected for injection. The regional method is used chiefly in operations for felons and amputations of the fingers and toes; a 1 per cent. solution of eucaine is used and is driven in close to the nerve trunks towards the base of the digit, a rubber band being first placed above the latter. Gottstein says pneumonia and bronchitis developed after abdominal operations about as frequently as when general anæsthetics were used. The rough handling of the peritoneum often causes intolerable anguish, and this is likely to prevent the general use of local anæsthesia in abdominal surgery.

Gerhardi[2] recommends Oberst's method of applying a ligature on the proximal side of the lesion and injecting **Cocaine**; it is said to require less cocaine, and the tissues are rendered bloodless.

Kaufmann[3] says constriction is just as good without the use of cocaine, if a sufficient interval be allowed to elapse after the constriction is applied.

REFERENCES.—[1] "Therap. Gaz.," Dec. 15, 1898, and "Arch. f. klin. Chir.," Band. 57, Heft. 2; [2] "Münch. med. Woch.," Sept. 27, 1898; [3] "Centralb. f. Chir.," Oct. 8, 1898.

ANEURYSM. (See also "Arteries.") *Priestley Leech, M.D., F.R.C.S.*

Lancereaux[1] gives details of the technique he employs in the treatment of aneurysm by the injection of **Gelatin.** The solution he now uses is white gelatin, 4·5 grammes, sodium chloride (7 per 1,000), 200 c.cm. This solution is sterilised at 120° C. It is best to prepare several samples and keep them at a constant temperature of 30° C. for

a few days ; those that become turbid or do not solidify can be rejected. The apparatus for injecting the solution consists of a flask of 400 c.c. fitted with a rubber cork pierced by two glass tubes ; one of the tubes reaches to the bottom of the flask and is connected with a piece of rubber tubing to a stout platinised needle ; the other tube, very short, can be connected to a pair of bellows or a force pump ; in this tube is a glass bulb fitted with wadding which serves to sterilise the air that compresses the liquid. The flask, cork. tubes, and tubing should all be sterilised by boiling ; the flask containing the gelatin solution is placed in a water bath at 37°, and when the solution is liquefied it is poured into the sterilised flask, which is quickly corked, and also placed in a water bath at 37° C. The site of the injection, generally the buttock, is carefully purified, and the needle driven deeply into the tissues, so that the point reaches almost to the underlying aponeurosis. The injection should be administered quickly, in less than a quarter of an hour. After injection the patient should be kept absolutely at rest, and the sac of the aneurysm should not be palpated. The injection should be repeated every six or eight days until the sac is obliterated. The procedure is painless, and absorption takes place without local or general reaction. The treatment by rest, diet, and drugs to achieve the high arterial tension should not be neglected.

Prof. Stoicesco,[2] of Bucharest, reports six cases of aneurysm of the aorta and innominate artery treated by this method.

W. J. Walsham[3] reports a case of **Extirpation** of a large non-pulsating aneurysm involving the common, internal, and external carotid arteries of the right side of the neck in a man aged forty-nine years. Nine cases of extirpation of carotid aneurysm were tabulated, all having recovered. The chief methods of extirpation employed are : (*a*,) The old operation of opening the sac, turning out the clots and securing the artery above and below ; (*b*,) The old operation *plus* the removal of the sac by dissection ; and (*c*,) The removal of the sac after the artery had been first tied above and below. The latter operation Walsham thinks is the ideal one. The conditions most favourable for extirpation appeared to be : (1,) Where there is insufficient room for proximal ligation, or where a proximal ligature is attended with great risk, as ligature of the innominate for subclavian aneurysm ; (2,) Where a large number of vessels communicate with the sac ; (3,) Where other measures have failed to cure the aneurysm ; (4,) Where the aneurysm, as in the popliteal artery, has become diffused, or rupture of the sac or gangrene is threatened ; (5,) Where the setting free of emboli, as in carotid aneurysm, would be attended with risk of cerebral softening.

Battle[1] reports a case of traumatic aneurysm of the gluteal artery in which he incised the sac and tied the distal end. He employed compression of the internal iliac artery through an incision in the abdomen in the linea semilunaris with displacement of the rectus. This compression of the internal iliac, he says, saved any great loss of blood.

Hofmann,[5] in a paper on the operative treatment of aneurysm founded on seven cases in Mikulicz's clinique, describes a new method of operating, which has been used in two cases by Mikulicz. It consists of two separate operations. The artery leading to the aneurysm is first tied either by Hunter's method some way above the aneurysm, or by Anel's method just above the aneurysm. After this wound has healed, if the tumour shows no signs of retrogression or it presses upon surrounding parts to the danger of the patient, the second part of the operation is done. It consists in opening the aneurysm by an incision large enough to clear out the contained coagula; the the wound is then sewn up and covered with a compressing bandage. Elastic compression is continued for some time, even for months after the wound has healed. Of course, this operation will not be done unless all infection of the aneurysmal sac can be excluded. It has the advantage over extirpation of needing a less prolonged anæsthesia; the operation itself is less difficult, the vein is not endangered, and none of the surrounding arteries are divided. If the skin is thin over the most prominent part of the tumour, make the incision elsewhere, as the skin may slough and lead to subsequent suppuration of the sac.

Langton[6] reported to the Clinical Society, March 24th, 1899, a case of abdominal aneurysm cured by silver wire. The patient was a woman with a pulsating epigastric tumour. On opening the abdomen it was found to be an aneurysm of the abdominal aorta; a trocar was introduced into the sac and not much blood issued from the cannula when the trocar was withdrawn; as there was some difficulty in introducing salmon gut into the sac five feet of silver wire were used. The puncture was secured with a silk ligature. There is at present a hard mass, but the thrill and bruit have disappeared, and the woman is in good health.

REFERENCES.—[1] "Journ. des Praticiens," Nov. 19, 1898, see also "Practitioner," May, 1899, p. 592; [2] "Journ. de méd. interne," July 21, 1899; [3] "Brit. Med. Journ.," Mar. 4, 1899, p. 532; [4] Ibid., Nov. 5, 1898, p. 1415; [5] "Beiträge z. klin. Chir.," Band. xxiii, Heft. 2; [6] "Treatment," May 25, 1899.

ANGINA PECTORIS. (See "Heart.")

ANTHRAX (Pustula Maligna). *T. Colcott Fox, M.B.*

J. H. B., of Bradford, writing in the "British Medical Journal," for December, 1898, *apropos* of the widespread use of the **Actual Cautery** in this lesion, points out that the mortality from cutaneous anthrax varies in different countries. Woolmer of the Argentine Republic only remembers two fatal cases out of something like five hundred cases treated with the actual cautery; whilst Muskett treated fifty cases with **Ipecacuanha**, internally and externally, without a death. In England the mortality is decreasing, and is now under 20 per cent J. H. B. says the best treatment is **Free Excision of the Focus of Mischief, and the Injection into the Tissues around of a Solution** (1 in 1000) **of Formalin or Chinosol.**

Strubell,[1] of Jena, treated a severe case by a Russian method, which has given Scharnowsky twenty-eight successive cures. Injection of a 3 per cent. solution of **Carbolic Acid** were made into the necrotic tissue of the nose, the surrounding tissues, and the infiltrated glands. **Hot Poultices** at a temperature of from 50° to 55° C. (from 122° to 131° F.) were also applied night and day, being changed every ten minutes. Under this treatment the man's condition became better, so that within ten days a line of demarcation was formed between the tip of the nose and the surrounding tissues. The injections, however, were continued, as the œdema had extended to the clavicles, and there was therefore a possibility of general septicæmia supervening. After three weeks the infiltration at last stopped and the glands decreased, so that the injection was no longer necessary. The tip of the nose healed up with only very slight cicatrisations. The patient had more than four hundred injections of 1 gramme of a 3 per cent. solution of carbolic acid without any toxic symptoms being produced. Strubell is of opinion that the hot poultices assisted in destroying the anthrax bacilli, for it is known that the latter are killed by a temperature of 42° C.

In Italy[2] several cases have been reported of the treatment by **Sclavo's Anti-charbon Serum.** In Salvatore's case, epitomised in the "British Medical Journal," five injections were made, and a total amount of 80 c.cm. injected without any ill effects, either local or general. The author was particularly struck by the sense of well-being which followed the injections. The treatment promptly arrested the œdema and caused its disappearance in a short time. Moreover, the destruction of tissue in the site of the pustule was considerably limited. Reference is made to thirteen other cases in which this serum was successfully used.

In Abba and Piccarda's case, referred to in the "Lancet," the

patient received a subcutaneous injection of 22 cubic centimètres, and the next day a second injection of 11 c.c. Recovery rapidly ensued, and this is said to be the twenty-seventh successful case.

In several reported recoveries **Simple Excision** was practised, or only injections of carbolic acid all around the pustule, or the external application of strong liquor **Ferri Perchloridi** with internal administration of 30-minim doses of the same preparation (Fielden).

REFERENCES.—[1] "Münch. med. Woch.," Nov. 29, 1898; [2] "Gaz. deg. Osped.," 1898-9.

ANUS (Fissure of). *Samuel G. Gant, M.D., New York.*

Platt[1] believes there are two distinct types of anal fissure :—

(1,) The first is situated at the muco-cutaneous junction at the back of the anal outlet, and usually takes the form of a small vertical fissure. Among the causes of this variety of fissure, the following may be mentioned : The passage of hardened fæces, severe diarrhœa, want of cleanliness, eczema, syphilis, laceration during confinement, and congenital stenosis of the anus. The fissure is extremely painful, owing to the very free nerve supply of this locality. It can be seen by separating the folds of the anus, although this will cause some pain. Defæcation is accompanied by great pain, which often continues for a considerable time after each evacuation. From some one of the causes mentioned there is an abrasion of the mucous membrane at the anus ; this is subjected to continual irritation, consequently the case becomes chronic. Cure can only be effected by giving rest to the parts, so that the fissure can take on a healing action.

(2,) The second variety of fissure is situated, or at all events begins, at the upper part of the anal canal, and is due to laceration of one of the valves. As a result, a small raw surface is produced, healing is prevented by the re-opening of the tear at each action of the bowels, and a small ulcer is formed which is usually triangular or **V**-shaped. The torn-down valve becomes œdematous, hypertrophied, and is often called a "sentinel-pile." The tear gradually extends downward along the anal canal until it reaches the anal margin. Under such circumstances the enlarged valve protrudes from the anus and can be readily seen. A speculum should be introduced in order to get a good view of its entire length.

TREATMENT.—With regard to the treatment Platt says the former of these affections may in many recent cases be cured by touching the fissure with **Silver Nitrate.** In chronic cases it will be necessary to incise it, and the underlying fibres of the external sphincter as well. Simple divulsion of the muscles sometimes succeeds, but is not altogether reliable. In cases due to laceration of the anal valves the

sphincter should be well dilated and the thickened portions of valve cut away, so that nothing is left for the fæces to catch upon. It is well also to curette the ulcer. In these cases it is rarely necessary to divide the fibres of the sphincter muscles.

REFERENCE.—[1] "Med. Chron.," Manchester, vol. ix, p. 32, 1898.

ANUS (Fistula of). *Samuel G. Gant, M.D., New York.*

Pennington[1] publishes a case of anal fistula followed by incontinence, with remarks on the cause of the latter. He says it is difficult to understand why an operation for fistula is followed in some cases by loss of control of the bowel and not in others, and proceeds to quote the opinions of different authorities as to the cause. Smith believes it is due to severing the muscular fibres, Esmarch to division of the nerves, Kelsey to vicious cicatrisation. Personally, he was of the opinion that it is due as much to a want of technique in operating, and inefficient after-treatment, as to any other cause. He adds that it is gratifying, however, to know that most cases can be cured, or, at least, made fairly comfortable. In those cases where the remaining segments of the sphincter show signs of contractility, measures looking to their union will be more or less successful. Among such measures are: (1,) Tait's operation upon the perineum; (2,) Application of the cautery; (3,) Exposing of the cut ends of the muscle, and their union by suture. When the nerve supply has been destroyed, the muscular segments greatly atrophied and displaced by cicatricial tissue, restoration becomes impossible. In such cases the operation devised and successfully performed by Gersuny, of Vienna, which consists in separating all the coats for two and a half inches up the bowel, then securing the gut and twisting it upon itself in an arc of 360 degrees, and stitching it to the skin by sutures, will perhaps give the best results.

Shaw,[2] in a very practical essay on fistula in ano, lays great stress on the fact that it is not only important to prevent an anal abscess becoming a fistula, but it is equally important, after fistulous passages have formed, to treat them radically before their parieties and internal linings become perfectly organised. In early childhood it is remarkable how fistulous tracts get well by the mildest measures, as rest, simple dressing, diet and laxatives. But in those cases in adults where the soft parts become involved, attended with deep burrows and sinuses, and more than one external opening, the only treatment is the ligature or the knife.

Seneca D. Powell[3] has for several years had flattering success in the treatment of anal fistulæ by the frequent injection of **Carbolic Acid**

(full strength) directly into the sinuses, after which the parts immediately surrounding the anus are washed off with alcohol to prevent injury. Ischi-rectal abscess he treats by thorough incision; after curetting, the cavity is washed out with the pure acid and packed with gauze moistened in a 2 per cent. carbolic solution. He reports a number of cases wherein he has succeeded in aborting large abscesses by the injection of the acid directly into the tumour. By its use he has been enabled to speedily convert chronic tracts and abscesses of tubercular origin into simple, healthy, granulating wounds that heal quickly. To prevent pain and deep penetration of the acid into the tissues in certain cavities and organs they are immediately mopped out with alcohol after the acid has been thoroughly applied to every crevice of involved tissue, and the immediate and after-results have been universally satisfactory.

REFERENCES.—[1] "Jour. Amer. Med. Assoc.," vol. xxxi, p. 1301, 1898; [2] "Dom. Med. Monthly," Toronto, vol. xi, p. 194, 1898; [3] Lect. at New York Post-Grad. School, Oct. 2, 1899.

APHONIA. (See "Larynx.")

APPENDICITIS. *Priestley Leech, M.D., F.R.C.S.*

A discussion,[1] lasting some three months, took place on this subject at the Société de Chirurgie. As usual the operative and non-operative treatment of this affection had its enthusiastic adherents. On the whole the balance of opinion was in favour of early operation, and curiously enough the majority of the physicians regarded it as a surgical affection.

M. Poirier seemed to voice the general opinion in the following axioms: (*a*,) There is no medical treatment of appendicitis; (*b*,) In acute cases operate as soon as possible after the diagnosis in made; (*c*,) Operation in doubtful cases is better; (*d*,) In sub-acute cases one may wait and operate *à froid*; (*e*,) Suppurative appendicular peritonitis demands instant operation; (*f*,) In slight cases it is less dangerous to operate at once than to wait and operate *à froid*, and the diagnosis in the early stages is not easy; (*g*,) Resection of the appendix should be done in every case if the search for it does not involve much injury to the neighbouring tissues. The majority of English surgeons will not subscribe to these propositions. That the diagnosis of this condition is not easy is shown by seven cases erroneously diagnosed and operated on as appendicitis by Morris,[2] of New York. The cases were as follows: (*a*,) A woman aged thirty—old intestinal adhesions from typhoid fever a year previously; appendix normal; (*b*,) A woman, twenty-five—tuberculous peritonitis; appendix normal;

(*c*,) Man, aged thirty-six—appendix found not inflamed but cancerous; (*d*,) A woman, thirty-four—normal appendix dragged in by inflamed Fallopian tube; (*e*,) Hysteria simulating appendicitis in a girl aged seventeen—the symptoms disappeared after operation; (*f*,) A remarkable instance of lobar pneumonia with symptoms of peritonitis; the patient, a woman aged forty-five, gave a history of former attacks of pain in the right iliac fossa; the normal appendix was found adherent to the Fallopian tube by old inflammation; (*g*,) A boy, aged ten, convalescent from measles; the peritoneum was full of viscid lymph but the appendix was healthy. All the cases recovered.

Delatour[3] points out the importance of *rectal examination* in doubtfull cases of appendicitis; an abscess from the appendix may lie within the pelvis and evade superficial examination; in these cases the point of tenderness is frequently absent, the rigidity of the rectus muscle may be absent or modified, and no tumour may be found in the iliac fossa.

R. A. Stirling[4] thus tabulates the more frequent complications of appendicitis that may upset all plans of treatment, even with the most careful technique: (1,) General septic peritonitis; (2,) Intestinal obstruction due to kinking of the recently separated intestine or to adventitious bands; (3,) Retro-peritoneal abscess; (4,) Fæcal fistula; (5,) Multiple abscesses of the liver; (6,) Gangrene of the cæcum; (7,) Phlebitis of the femoral vein; (8,) Communication of the abscess with the rectum, vagina, or bladder; (9,) Ventral hernia which is said to be a frequent sequela in America; (10,) Fatal hæmorrhage. Bryant mentions one case from ulceration of the deep circumflex artery; Fowler another from ulceration of the iliac vein; (11,) Parotiditis; (12,) Empyema; (13,) Pericarditis.

H. Kümmel[5] has excised the vermiform appendix in the stage of freedom from acute symptoms in one hundred and four cases without a death. He says the greatest number of relapses occurred in his experience during the first year.

Brewer,[6] of New York, gives notes of four atypical cases which are interesting. One was where an inflamed appendix was found after much trouble in a large sub-cæcal fossa which was lined with peritoneum and had no connection with the general peritoneal cavity; another had a large retro-cæcal abscess caused by an inflammation of an extra-peritoneal, retro-cæcal appendix; the cellulitis so caused spread upward to the kidney and downwards to the external abdominal ring, where it rapidly spread in the loose subcutaneous areolar tissue. In the third case the diagnosis for some time wavered between typhoid fever, early extra-uterine pregnancy or suppurating cyst of

the ovary or broad ligament; an intra-abdominal abscess was opened when it was found to be due to appendicitis.

Betham Robinson[7] relates four cases of appendicitis with unusual and interesting complications.

The four cases, of which notes are given, had suppuration in the neighbourhood of the liver as a sequel of appendicitis. Rutherford Morrison has drawn attention to a space behind the right lobe of the liver, bounded internally by the duodenum and foramen of Winslow, below by the hepatic flexure of the colon, and posteriorly are the reflected peritoneum form the liver, the right kidney, and the posterior abdominal wall. In this space an abscess may form after appendicitis. The lesser sac of the peritoneum is probably shut off easily by adhesions about the foramen of Winslow. Infection may also extend from this space over the anterior and superior surfaces of the right lobe of the liver round the inferior margin or round the edge of the right lateral ligament forming a subdiaphragmatic collection.

The recumbent position and the inclined plane on the outer side of the ascending colon leading to the space over the head of the right kidney are, with the absence or weakness of limiting adhesions on the outer side of the cæcum, factors of importance in the accumulation of pus beneath the liver.

The following points are deduced from the four cases quoted: (1,) In a small proportion of cases of appendicitis with abscess there is intra-peritoneal extension to the liver region; (2,) In relation with the liver pus may be only below it or also above it, "subdiaphragmatic;" '3,) Clinically there is considerable difficulty in determining where the apparent upper border of the liver is raised, how much of this is due to simple displacement upwards by a fluid collection or to a subdiaphragmatic abscess, or to an associated lesion at the lung basis. These collections of pus are intra-peritoneal and not sub serous.

Bennett[8] says extensive operations for fæcal fistula following appendicitis are a mistake, and are often fatal. The fistula in most cases finally heals, although a long time may elapse before this takes place. Delivery of the cæcum through the abdominal wound is rarely necessary and it may lead to abdominal distension. In sewing up the abdominal wound he transfixes the whole parietes with fishing gut sutures, and does not suture the layers separately. For abdominal distension he uses a large injection containing **Rue** for the simpler cases; if this is insufficient he gives 6 drachms of **Castor Oil** with 10 or 15 drops of **Laudanum**, or if there is vomiting 5 grains of **Calomel.**

Woolsey[9] says in order to avoid hernia in operations for suppurative appendicitis, McBurney's inter-muscular or muscle-splitting incision

should be practised ; it avoids the division of nerves beyond obviating mechanical and cicatricial weakening of the wound ; the wound must be closed as much as possible by sutures ; provisional or secondary sutures are then passed into the part left open for drainage, or the gauze drain may be removed early to avoid the walls of the cavity becoming rigid. Woolsey, after pushing the gauze through the nearly closed wound, wraps round the portion passing through the wound a piece of rubber tissue ; this prevents the gauze from sticking to the edge of the wound, and thus allows it to be withdrawn on the second day without dangerous traction on the structures beginning to heal. Lanz [10] quotes a case to support his opinion that an appendix externally to all appearance normal, internally may have undergone such important changes that the life of the patient is in constant danger. If the symptoms have justified an operation remove the appendix, even if it appears normal externally.

REFERENCES.—[1] "Rev. de. chir.," for Feb., March, April, and May, 1899 ; [2] "New York Med. Journ.," April 8, 1899, quoted in "Brit. Med. Journ.," Epit., July 8, 1899, p. 6 ; [3] "Brooklyn Med. Journ.," 1898, quoted in "Inter. Med. Mag.," March, 1899 ; [4] "Intercolonial Med. Journ. of Australasia," Aug. 20, 1898 ; [5] "Berlin. klin. Woch.," No. 15, 1898 ; [6] "Ann. Surg.," Sept., 1898 ; [7] "Lancet," May 6, 1899, p. 1209 ; [8] "Clin. Journ.," Sept. 7, 1898 ; [9] "Med. Rec.," April 1, 1899 ; [10] "Cor.-Bl. f. schweiz. Aerzte," June 15, 1899.

ARTERIES (Transperitoneal Ligature of Iliac.)

Priestley Leech, M.D., F.R.C.S.

Mr. Bernard Pitts [1] reports two successful cases of this operation. One was ligature of the internal iliac for pulsating sarcoma, and the other was ligature of the common iliac artery for repeated hæmorrhage from a pelvic abscess in a man.

Baudet and Kendirdjy [2] have issued a monograph on ligature of the internal iliac artery. It is now undertaken for the following conditions : Gluteal aneurysm, prostatic hypertrophy, teleangiectasic sarcoma, inoperable uterine tumours, for the prevention of hæmorrhage in the course of certain pelvic operations, such as abdominal panhysterectomy and abdomino-perineal excision of the cancerous rectum. Bier does not think the operation is justifiable in prostatic hypertrophy.

Quénu and Duval [3] give the results of an anatomical study of the internal iliac arteries. They think the transperitoneal route much the better one. The abdomen is opened by a median incision below the umbilicus, and the artery is exposed by a vertical incision of the posterior layer of the parietal peritoneum ; the middle of this incision should correspond to the level of the upper margin of the sacrum. The operation is usually easy on the right side, but on the left side it

may be difficult when the sigmoid flexure is short and fixed by a narrow mesentery. In this case both layers of the mesentery must be incised, avoiding the vessels to the large intestine, three layers of peritoneum being divided before the artery is exposed.

REFERENCES.—[1] "Lancet," Jan. 21, 1899; [2] "Gaz. des Hôp.," April 1, 1899; [3] "Rev. de chir.," Nov. 1898.

ARTHRITIS.

Synopsis.—(Vol. 1898, pp. 18 and 117.) Arsenic; Bier's Treatment of tubercular form by arresting circulation, followed by cautious massage after a time.

ARTHROTOMY. (See "Joints.")

ASCARIDES. *Henry Dwight Chapin, M.D., New York.*

Dr. Geo. F. Still[1] comes to the following conclusions in reference to the treatment of thread-worms :—

(1,) That the appendix vermiformis is a common habitat of oxyuris vermicularis in childhood.

(2,) That the generally accepted view that every single ovum of oxyuris vermicularis must be swallowed before it can be hatched, is at least open to doubt, and there is a strong probability that the appendix vermiformis serves in some cases as a breeding place for thread-worms.

(3,) That the presence of thread-worms in the appendix may cause a catarrhal condition therein, as shown *post-mortem* by a swollen appearance, due to thickening of its wall.

(4,) That this swollen condition of the appendix due to thread-worms is associated in some cases with pain in the right iliac fossa which may simulate ordinary appendicitis.

(5,) That in the treatment of thread-worms **Large Injections** must be used, and in view of the difficulty of dislodging the worms from the appendix, and their possible presence in the small intestine, the injections should be combined with the administration of drugs by the mouth.

REFERENCE.—[1] "Brit. Med. Journ," No. 1998, 1899.

ASPHYXIA NEONATORUM. (See "Labour.")

ASTHMA. *Prof. H. P. Loomis, M.D., New York.*

One of the most difficult problems which the physician has to encounter in the treatment of asthma is the determination of the cause of the asthmatic attack, or the condition which underlies its development. Conditions of the blood are often ignored, which, if closely inquired into, would throw light upon an otherwise very indefinite causation.

Dr. Beverly Robinson suggests malarial toxæmia as a cause which is frequently present yet often ignored. The presence of malaria may cause slight enlargement of the spleen and liver, moderate secondary anæmia, engorgement of the nasal, laryngeal, and tracheal mucous membrane, or parts of the upper or lower air tract. In these cases **Fowler's Solution of Arsenic,** given in increasing doses to its physiological effect, gives the most marked beneficial results. If the bowels are constipated and the liver inactive, **Warburg's Tincture,** in 5-grain doses three or four times daily, is indicated.

In treating obscure cases of asthma it may be most important at times to recognise the inherent gouty poison in the system. If this is found and treated, amelioration or cure of the patient's symptoms will follow. Dr. Robinson has seen asthmatic attacks of this class of patients speedily cured by giving **Colchicine Granules,** 1 milligramme in each granule, three or four times a day. Care should always be exercised in giving **Nitrite of Amyl** to relieve the paroxysms of asthma when there is a weakened and distended right heart. The nitrite of amyl in these cases is very apt to intensify the extensive pulmonary congestion, and many cases have been reported where it has led to a vital issue. Again, it should be remembered that **Morphine Injections** will not infrequently afford relief, and many cases are seen where morphine, in ordinary doses, will aggravate rather than subdue the attack, and even add gastralgia to the dyspnœa from which the patient is already suffering. Moreover, when the patient's urine contains an appreciable amount of albumin and other evidences of nephritis, it is often injurious to give morphine. Dr. Robinson goes on to say this is particularly true when the pupils are noticeably contracted, and there is good reason to believe that in administering morphine under these circumstances we may precipitate a rapidly fatal uræmic attack.

Most marked results have been reported from the use of the **Supra-renal Capsule** in the treatment of asthma. Dr. Solis-Cohen,[1] abandoning all other measures, has given supra-renal capsules an extensive trial in his own case, except that he found it necessary to wear dark glasses when driving in the sun. The treatment, he says, was entirely successful in controlling the symptoms. He believes that the action of the supra-renal substance is to raise blood-pressure by increasing the vascular tone, and this action may be local or general. To this effect, in bringing about compression of the vessels of the nasal mucous membrane, he attributes the relief experienced. He recommends 1 tablet representing 5 grains of supra-renal substance, allowed to dissolve in the mouth. (The effect

seems better when the remedy is administered in this way, probably owing to direct absorption). The tablet is to be administered every two, three or four hours according to the effects ; the average amount taken being 5 tablets daily, the last one at bedtime. Sometimes a single tablet is not sufficient, and two must be taken at a dose, that is, within a few minutes of each other. If coryza or sneezing has begun it will almost invariably cease within fifteen minutes after taking the tablet.

Dr. Von Noorden[2] believes that **Atropine**, in ascending doses, is the best treatment of asthma of spasmodic type. The treatment should be continued for from four to six weeks. In his hands the method consists in administering $\frac{1}{120}$ of a grain of atropine every two or three days, and then gradually increasing the dose until it reaches as much as $\frac{1}{60}$ or $\frac{1}{12}$ of a grain, after which the dose may be again decreased. It is necessary that the patient should be continually under the observation of the physician to avoid accidents under this method of treatment, but, with care, accidents are not met with.

A number of cases have been reported during the past year where **Compression of the Pneumo-gastric Nerve** at the surface of the neck has completely caused the disappearance of the attacks of asthmatic dyspnœa. Dr. A. de Miranda[3] states that the compression was simply accomplished in his cases by means of a finger placed at the upper point of the neck, and yielded relief within a few minutes.

Dr. Strangways[4] has obtained gratifying results with **Resorcin** in hay fever, but stipulates that it is quite necessary to remove the diseased conditions in the nose, for by this means often the attack can be aborted, and possibly cured, when his proposed nasal wash is made use of. He advises frequent washing with the following solution :—

℞ Acetic Acid	ɱij	Common Salt	grs. iv
Resorcin	grs. j-jss	Water	fl.℥j

Accompanying this frequent washing, hydrochloric acid is prescribed internally.

REFERENCES.—[1] "Philad. Med. Journ.," Aug. 13, 1898 ; [2] "Rev. de thérap. med.-chir.," Feb. 15, 1899 ; [3] "Sem. méd.," vol. xviii, p. 110; [4] "Pract.," Oct., 1898.

Asthma in Australia. *G. Lane Mullins, M.A., M.D., Sydney.*

A. W. Marwood records the case of a woman who suffered from asthma for twenty years. The attacks were more severe at the menstrual periods. The flow being painful and evidently obstructed, dilatation of the cervix uteri was resorted to. Hegar's dilators were used, beginning with No 1, which was introduced with difficulty, and

working up to No. 12. The asthma entirely disappeared, together with the dysmenorrhœa, and the patient was well nine months after the operation.

REFERENCE.—"Aust. Med. Gaz.," Oct. 20, 1898.

ATROPHIC RHINITIS (OZÆNA). (See "Nose.")

BERI-BERI. *James Cantlie, F.R.C.S.*

Since the appearance of beri-beri in the Richmond Asylum, Dublin, in 1894, closer attention has been paid to cases of so-called peripheral neuritis in temperate climates, with the result that in many extra-tropical countries beri-beri has been diagnosed. Amongst these may be mentioned: England (1894), in the Suffolk County Asylum, Melton, Suffolk; Alabama, U.S.A. (1895), in the State Asylum, Tuscaloosa; Arkansas (1895), in the State Asylum, Little Rock; North Germany (1897), in the Grafenberg Asylum; Saxony, in the Alt Scheritz Asylum, Leipzig.

In Japan beri-beri occurs even in the Northern Island of Yeso, and also on the Newfoundland coasts amongst the fishermen. The endemic seats of the disease seem to be Japan and the Malayan Archipelago, but in Ceylon, Assam, Burmah, various parts of India, the coast of China, and in Brazil the disease has obtained a firm hold, and recurs frequently or persists with more or less virulence. Australia seems to have acquired the disease, but it is chiefly confined to the Chinese immigrants. On board ships beri-beri appears in what may be termed an erratic fashion. Dr. Neil MacLeod[1] records an outbreak amongst the officers of a sailing ship on its way from New York to Shanghai. Not only did the disease appear before any beri-beri infected port was reached, but it was confined to the cabin men, never reaching the crew in the forecastle. On several occasions on ships lying in British ports beri-beri has broken out for the first time amongst the native (Indian or Chinese) crew, and sometimes the appearance of the disease has been delayed until the ship had started on her return voyage from a British port to the East.

Food as a Cause of Beri-beri.—In the article mentioned above Dr. Neil MacLeod states it as his opinion that food is the main factor in the development of beri-beri. On the ship he refers to the disease appeared amongst, and was confined to, the officers. They resided in commodious and well-appointed cabins, therefore overcrowding could not be assigned as the cause. The officers' diet was more varied than that of the men, and he is forced to the conclusion that it was some article of diet that conveyed the poison. Moreover, of the four officers attacked, the two who persisted in eating the ordinary officers'

room diet died, whilst the two who recovered left off the cabin diet and took maize meal, stale bread, molasses, condensed milk and hot water. It would appear, therefore, that Dr. MacLeod has made out a case against food as a cause of beri-beri. In favour, also, of this conclusion is the fact that an improved dietary eliminated beri-beri from amongst the sailors of the Japanese navy.

Beri-beri a "Place" Disease.—Outbreaks of beri-beri are ever associated with a crowd of persons. The places where beri-beri has appeared in temperate climates have been invariably in asylums or on board ships; in tropical climates also, in overcrowded coolie quarters, in native hotels, and in coolie barracks, usually temporary and ill-constructed, on plantations.

Dr. D. C. Rees[2] upholds the statement that beri-beri is a "place" and not a "food" disease. He shows that in a certain line of vessels, all drawing food from the same sources, only half of the ships became beri-beric, and that when once the disease attained a hold recurrences took place again and again. Removal from the infected environment is followed by speedy recovery usually, as is well seen when the patients leave their ships and come ashore to a hospital. It must, however, be pointed out that this implies a change in diet as well.

Dr. J. A. Lowson[3] states that during four successive voyages between Hong Kong and Australia, outbreaks of beri-beri occurred amongst the crews of the s.s. Chiengtu. Fresh crews, previously infected, were shipped for each voyage, yet the disease recurred, and it was only after most careful disinfection with 1 in 5 **Carbolic Acid,** that the disease disappeared. Dr. Lowson, also, on the s.s. Abyssinia, between Hong Kong and Vancouver, Canada, met with beri-beri amongst the crew. Disinfection was tried with a 1 in 1,000 solution of corrosive sublimate, but it proved useless, as, on the return voyage, the men who slept in the same bunks as those infected with beri-beri during the previous voyage alone developed the disease. Disinfection with 1 in 200 **Corrosive Sublimate,** checked the disease; otherwise, Dr. Lowson was to have recommended putting new wood-work into the forecastle of the ship where the crew slept.

The Parasitology of Beri-beri.—Dr. W. K. Hunter[4] discusses the etiology of beri-beri, and gives in detail the steps he took in regard to investigating the bacteriology of the disease, more especially from the standpoint of Pekelharing and Winkler's micro-organisms. Dr. Hunter practically repeated the researches of the Dutch investigators, and arrived at almost identical conclusions. The objections raised against the micro-organisms they found were raised chiefly by Scheube

and Fiebig, but they were merely general objections, and not founded on individual researches of their own.

Dr. Hunter states that the micrococcus of Pekelharing and Winkler is probably present in all cases of beri-beri, and as the organism has the property of producing, when injected into animals, a neuritis similar to that in beri-beri, it is reasonable to draw the conclusion that the white staphylococcus described by these writers is the cause of beri-beri. The presence of the white staphylococcus also in rice used for food, would seem to indicate a "food," and not a "place," origin for the disease.

Dr. W. Gilmore Ellis,[5] after an extensive experience of beri-beri in Singapore, concludes : (1,) That the degeneration of the peripheral nerves in the paralytic cases of beri-beri, and of the sympathetic, phrenic, and vaso-motor nerves in the moist cases, is the cause of the symptoms ; (2,) That mixed cases (dry and moist) of beri-beri are most common ; (3,) That beri-beri is not a fatal disease unless the pneumo-gastric, phrenic, and branches from the sympathetic ganglia in the neck are affected.

Dr. F. W. Mott, F.R.S., and Dr. W. D. Halliburton, F.R.S., experimented on cats with blood drawn from a case of beri-beri which had been fixed by alcohol. The result of their investigations shows that the blood of beri-berics contain a substance which (like choline) produces a fall of arterial pressure accompanied by a dilatation of the vessels of the intestinal area. During the *post-mortem* examination of a case of beri-beri there was found great venous congestion and distension of the right side of the heart with dark blood. The liver, stomach, and intestines were greatly congested, and numerous hæmorrhages throughout the substance of the liver were found microscopically.

REFERENCES. —[1] "Brit. Med. Journ.," Aug. 14, 1897 ; [2] Ibid., Sept. 18, 1897 ; [3] Ibid., Sept. 25, 1897 ; [4] "Lancet," July 31, 1897 ; [5] Ibid., Oct. 15, 1898.

BLACKWATER FEVER. (See "Hæmoglobinuria.")

BLADDER (Diseases of). *E Hurry Fenwick, F.R.C.S.*

Remarks on the treatment of Stone in the Bladder when associated with Hypertrophy of the Prostate.—In a most ably written article, Dr. Edward L. Keyes,[1] of New York, discusses this subject, and states his conclusions as follows :—

(1,) When stone complicates enlarged prostate, if the condition of the latter be such that were the stone absent no operation would be called for, then the whole question is to be solved by deciding whether the obstructive quality of the prostatic enlargement, the size of the

bar, the depth of the bas-fond, the irritability of the prostatic urethra, and its resentment of instrumental interference,—whether any of these factors be sufficiently accentuated to make litholapaxy impossible or to make it possible only at the expense of leaving the patient (as to his subjective symptoms) worse than before. If such conditions do obtain, then the stone should be removed by the knife.

(2,) In short, the main matter is one of diagnosis by the searcher, the cystoscope, rectal touch, and the tentative testing of the prostatic urethra with instruments.

(3,) The mere size of the prostate is not a factor in the problem.

(4.) The size or position of the stone is not a factor, except in the case of encysted stone, or one too large for the lithotrite to grasp, or in the case of a foreign body. The smallness alone of the stone is relatively an argument against litholapaxy, since the symptoms in such a condition must be ascribed rather to the prostate than to the foreign body.

(5,) If lithotomy be performed, the suprapubic route should be selected, since this opens the door for more perfect work, and allows the surgeon to remove obstructions, such as a third lobe, interstitial growths, outstanding horse-collar enlargement, bar, and to lower the vesical end of the urethral floor, thus accomplishing all that could be done by a more extensive prostatectomy without very seriously increasing the operative risk.

(6,) Finally, here, as elsewhere in surgery, the only safe practical guide is surgical judgment, based upon diagnosis guided by experience.

Vesical Hæmorrhage.—Noryés,[2] in discussing the treatment of bleeding from vesical neoplasms, states that the rational and immediate indication is removal of the growth by **Operation.** If, however, circumstances are such that this is impracticable, the bladder must be first freed of its clots either by a catheter of large calibre or by incision and permanent drainage, after which a 5 per cent. solution of **Gelatin** in 7·10 per cent. of **Sodium Chloride** is injected into the bladder and slowly withdrawn. At first it is injected in small quantities; later, sufficient of it is forced in to fill without distending the bladder. The catheter is then taken out, and the injected gelatin salt solution is allowed to remain.

Thrush of the Bladder.—V. Frisch[3] records the case of an anæmic woman, aged sixty-four, who sought advice on account of an acute cystitis. She passed voluntarily 4 ounces of urine, and 12 more were obtained by catheterisation, the last portions bubbling and containing a considerable quantity of gas (pneumaturia). The urine showed a trace of albumin and 4 per cent. of sugar; it had a musty odour, and

deposited a thick precipitate of white granular bodies, which were occasionally floated up to the surface by gas bubbles. Cystoscopic examination revealed more of these bodies attached to the wall of the bladder. Microscopically, they were seen to consist of a mycelium, which bacteriological cultivation proved to be of the nature of thrush. The urine contained also yeast cells, some bacteria, bladder-cells, and a very few pus corpuscles.

Senator has published a case in which pneumaturia was produced by the alcoholic fermentation of diabetic urine, but in that under notice it was found that the bulk, at any rate, of the gas resulted from the action of the bacterium coli; this had been previously recognised, and also experimentally produced, by Schintzler.

Von Frisch treated the patient by *washing the bladder* out with a 1 in 1,000 solution of **Silver Nitrate,** and the condition was practically cured in four weeks. Thrush of the bladder has never previously been described, the organ being regarded as one of the few externally communicating cavities which escape the deposit of the fungus. Whence it comes in this case cannot be determined; the only plausible theory is that it had previously affected the vagina, whence it had disappeared before the patient was seen.

Extrophy of Bladder, treatment by Cysto-colostomy.—Tuffir,[4] gives the following details of an operation which he has performed successfully, with relief of this troublesome condition :—

(1,) The entire mucous surface of the bladder is dissected free, with the exception of the vesical trigone and a small margin of mucous membrane. Special care must be taken in the upper portion, where the peritoneum is closely associated. Rigid sounds are passed into the ureters, which facilitates their dissection for some distance upward. The entire field of operation is then carefully protected by aseptic cloths.

(2,) The peritoneal cavity is then opened as low down as possible, the sigmoid flexure is drawn out with as little traction as possible, forming a hernia through the peritoneal opening, which is closed about it. The intestine is then opened by a longitudinal incision as if for an artificial anus.

(3,) The vesical trigone is then sutured to the borders of this opening, thus adding a portion of the bladder to the intestinal wall. Mucous membrane is sutured to mucous membrane, and the muscular coat of the bladder to the sero-muscular coat of the intestine. Either silk or catgut may be employed.

(4,) The cutaneous and aponeurotic layers are thus sutured together. For a few days a fistula may persist, from which faecal

matter and urine are passed; it will, however, close spontaneously. Four months after the operation the abdomen completely healed, with a deep depression where the bladder had been. The urine passes entirely by the intestine. There is no abdominal pain, no sign of intestinal inflammation, and no pruritus ani. The patient has five or six stools a day without any inconvenience. The general health is good, and there is no indication of renal involvment. The author believes that the condition resulting from the operation is therefore much to be preferred to that obtained by any other operative procedure.

Vesical Tuberculosis—Surgical Treatment.—In a communication on this subject, E. Desmos (Paris) said that, although tuberculosis of the urinary passages often remains localised to the organ originally attacked, operative procedures, such as curetting or total resection of the vesical mucous membrane, were generally followed by no good results, and were sometimes followed by generalisation of the infection throughout the urinary apparatus. Nevertheless, painful forms of tuberculous cystitis can often be dealt with satisfactorily by suprapubic cystotomy, but in these circumstances care must be taken to leave the mucous membrane untouched, whatever lesions it may present; the operator must be content with draining the bladder. If the patient is willing to put up with the inconvenience of a fistula for a long time—at least a year—not only does the pain diminish or cease altogether, but nearly all the lesions undergo a temporary arrest, owing to the permanent relief of the congestion of the bladder walls and the abolition of micturition through the natural passage. When operation of any kind is contraindicated, recourse must be had to **Instillations of Sublimate** and injections of **Guaiacolated Oil,** and to general treatment.

Cystitis—Treatment by Pyoktanin.—R. E. Graham[5] regards every case of inflammation of the bladder and urethra as due to micro-organisms. The difficulties met with in the treatment of bladder trouble by means of the stronger and more efficient antiseptics are two-fold: First, when they are used in sufficient strength to act as germicides, they are powerful irritants to the delicate mucous lining of the bladder, and their use is attended with considerable pain. Second, they exert their influence on the inflamed membrane only while being applied, which usually is a very short time.

In the treatment of cystitis a germicide is demanded whose irritant property is very slight, even in concentrated solution, and whose germicidal and antiseptic power is marked in very dilute solutions, and one whose action is continuous over quite a period of time. The

PLATE I.

Dr. Jewell's case ot X-Ray of a Stone in an old man's bladder.

substance most fully combining these four requirements is **Pyoktanin**, which can be applied to the most delicate mucous membrane, not only in concentrated solution, but in powdered form, with but slight if any irritation.

As a germicide and antiseptic, pyoktanin stands high on the list. It destroys the vitality of anthrax bacilli in solutions of 1 to 1,000, and retards the development of pus cocci in solutions of 1 to 2,000,000. Pyoktanin, when applied to an inflamed mucous membrane, stains the same intensely blue; this colour remains for a number of days, and the pyoktanin is active as an antiseptic as long as any colour remains.

The method of application is as follows: After drawing off all the urine with the catheter, a fountain syringe is filled with warm sterilised water, and nozzle attached to catheter *in situ*, and after filling the bladder a couple of times with water and allowing it to run out, while the catheter is still in position, with a small rubber syringe a couple of drachms of a saturated solution of pyoktanin are injected into the bladder through the catheter; a very small quantity of water is now poured in from the fountain, sufficient to free the catheter from the solution of pyoktanin. The pyoktanin is allowed to remain for a minute or two, when the bladder is filled with water from the fountain syringe, and allowed to pass out; this is repeated until the water comes back clear and free from blue tint.

When the inflammatory trouble is very severe, the patient may suffer a good deal of pain several hours after treatment, but this is readily relieved by 1-grain doses of **Codeine.** The treatment is repeated about every ten days.

The author cites four cases treated in this manner with good results.

Radiography of Bladder Stones.—The following case is recorded by Dr. Jewell, of Balham, who was consulted by Mr. G. B——, a tall, well-built man, aged seventy-three, for symptoms of cystitis of several months' duration. There were no symptoms of stone in the bladder, but the patient had passed a catheter every day for some years for a supposed stricture. He had never suffered pain on exertion either on walking, riding or driving, or even dancing.

The prostate was somewhat enlarged. Mr. Glew, of Clapham, took a radiograph of the bladder and pelvis (*Plate I*, twenty-five minutes' exposure, 10″ spark). The patient was made to sit upon the plate, the body being tilted back so as to allow of the rays being projected downwards from the suprapubic region. The stone shadow is clearly seen, and from it the stone was estimated to be 2″ × ¾″. Mr. Hurry

Fenwick measured the stone with the lithotrite, and found it to be a flat oval, 2″ × 1½″. The crushings weighed over ½ an ounce, and was mainly composed of urates and phosphates. The patient was out on the tenth day.

If such a radiographic diagnosis could always be obtained in old men, much needless pain and danger would be avoided; for the sound is often difficult to guide into pockets or pouches behind upraised prostatic collars, and is sometimes uncertain when the stone is soft or covered with muco-pus. Moreover, bruising of the collar must take place in those who present any marked enlargement of the prostate, and this not infrequently aggravates pre-existing cystitis or induces low and obstinate form of cysto-prostatitis in those who previous to the sounding enjoyed the comfort of sterile urine.

REFERENCES.—[1] "Ann. Surg.," May, 1898; [2] "Ann. des mal. des org. Gen-urin," 1898, No. 8; [3] "Wien. klin. Woch.," 1898, No. 39; [4] "Gaz. hebd. de méd. et de chir.," July 14, 1898; [5] "New York Med. Journ.," June 25, 1899.

BLEPHARITIS. (See under "Eyelids.")

BOILS. (See also "Furunculosis.")

Synopsis.—(Vol. 1898, p. 12.) Apply **Airol** as 10% gauze.

BRAIN (Surgery of the). *J. E. Platt, M.S., F.R.C.S.*

Injuries.—Injuries to the head, even if apparently of slight account in the first instance, are so prone to be followed by grave consequences, that it is well to draw attention periodically to the necessity for the exercise of care and the maintenance of absolute rest of body and mind in the treatment of these cases. No head-injury which has been accompanied by loss of consciousness, even momentarily, should be treated lightly. Several cases which have been recorded during the past year, show that cerebral abscess and other grave sequelæ may follow what were in the first instance apparently trivial injuries.

The advisability of **Trephining** and elevation of the depressed bone in almost all cases of depressed fracture is now generally recognised. The only exception to this rule is possibly cases of depressed fracture in children, when the depression is slight and when there are no cerebral symptoms.

Mr. Victor Horsley[1] points out that sudden death in injuries to the central nervous system is not due to heart failure, as was formerly supposed, but to paralysis of the respiratory centre from the sudden disturbance to which the cranial contents are subjected. It has been noticed in experiments upon animals that, under such circumstances, the respiration stops immediately, whilst the heart may go on beating for some time.

Horsley[1] also discusses the treatment of penetrating wounds of the brain. The first thing to be done is to localise, as far as possible, the course which has been taken by the instrument or foreign body inflicting the injury. Hæmorrhage must be checked, and in this respect it must be remembered that bleeding from a cerebral vessel is more immediately dangerous than bleeding from a meningeal vessel, since the latter takes time to develop, while there is nothing to prevent rapid pouring out of blood from a cerebral artery and consequent death from compression. The wound should be thoroughly explored, and any foreign body, fragments of bone, and hair removed, care being taken to avoid further injury to the brain. The treatment of a wounded cerebral artery is to tie it on the cardiac side by dipping a large aneurysm needle under it. A wounded cerebral sinus may be closed either by suture or plugging. With regard to subsequent septic inflammation of the brain-substance, it may not be thought advisable to push *disinfection* in all cases. Horsley, however, says that he would not like to accept responsibility for any case, unless he was sure that he had washed away all the lacerated brain-substance with perchloride of mercury lotion of 1 in 1,000 strength. Failure of complete asepsis may lead, not to acute septic meningitis, but to a very slow chronic form of abscess of the brain.

Borsuk and Wizel[2] report a case of hæmorrhage into the white substance of the brain, leading to aphasia, hemiparesis, and Jacksonian epilepsy, which was completely cured by removal of the clot.

Taylor[3] has collected an interesting series of forty-five cases of knife-blade wounds of the skull. Many of the cases date back to pre-antiseptic days, and consequently the conclusions which can be drawn from them are of little value.

Further cases have been reported in which bullets in the brain have been localised by the Röntgen rays.

Walton[4] reports a number of cases which show that, as a result of local bruising of the brain either at the direct seat of injury or by contrecoup, there may be a considerable amount of serous effusion into the subarachnoid space, with or without œdema of the brain substance. The effusion may give rise to paralysis or coma, and may thus simulate meningeal or middle cerebral hæmorrhage. If severe symptoms arise, an exploratory trephining is called for.

Nicoll[5] records an interesting case in which symptoms of intracranial pressure arising acutely after injury were cured by tapping the lateral ventricle.

Operative Measures and Technique.—Keen[6] advocates the use of the **Gilgi Wire-saw** for exposing large areas of the brain. The saw

consists of a piece of roughened steel wire about 35 centimètres in length, and 0·5 millimètre in diameter, and with a loop at each end. Small trephine openings are made, and then, after separating the dura from the skull, a piece of silk is passed by a probe, and the saw is drawn under the skull by the silk. Handles are attached to the loops and the skull is cut through by drawing the wire backwards and forwards. With a little care the edges can be bevelled so that when the bone is replaced, there will be little tendency for it to press upon the brain. Keen found that the dura was uninjured by the saw even when removing portions of skull of considerable size. Podrez[7] has devised a special instrument, composed of a piece of strong, well-tempered watch-spring, for passing the saw between the trephine openings.

With regard to closure of the opening in the skull after trephining, Nicoll[5] advocates *replacement of the discs of bone.* He says that he has not found any subsequent absorption of the bone, even in cases which he has inspected after intervals of ten, seven, and six years respectively. The objections which have been urged against replacement are the risks of necrosis during healing, and of remote absorption. Necrosis will not take place if proper aseptic precautions be adopted, and with regard to absorption, if it does occur, the bone will probably act as a scaffolding for the deposit of new bone or of fibrous tissue. David[8] has made some important experiments upon dogs which bear upon this point. The animals were killed at varying intervals after the skull had been trephined and the discs replaced. He found that the replaced bone, when implanted aseptically, reunited firmly, and there was no necrosis.

The beneficial results of an operation, in cases where the bone is not replaced, may be negatived by the subsequent formation of adhesions between the scalp and the membranes of the brain. Various means have been adopted to prevent this. Thin sheets of gold-foil or of rubber-tissue have been introduced into the opening, but it would appear that these substances may become surrounded by connective tissue, thus leading to extensive adhesions, and further that they may cause late suppuration. Freeman[9] strongly advocates the introduction of a piece of the **Lining Membrane of the Shell of a Hen's Egg,** and records two experiments upon animals in which he has carried out this method with success. He claims that the egg-membrane is remarkably durable and tough in spite of its thinness, and that it incorporates itself with the surrounding tissues without causing perceptible irritation or the formation of noticeable cicatricial deposits. Grekoff,[10] of St. Petersburg, records two cases in which he

has been successful in closing old defects in the skull by the insertion of **Plates of Charred Bone.** The charred plates were gradually replaced by new bone. He considers that the plates act as a framework over which new bone develops, and therefore that it is best to use bone of cancellous texture. In both cases he obtained the bone from the scapula of a calf. It is important that the plates be thoroughly charred.

Stratton[11] considers the subject of surgical occlusion of the cerebral sinuses. He points out that, if a large cerebral sinus be closed by ligature, so much tension must be placed upon the ligature that there is great danger of its cutting through the walls of the sinus, or, if this does not happen, that the dura mater on each side is so tightly stretched that it presses upon the brain to a dangerous extent. He is of opinion that a large sinus can only be ligatured safely if tension be relieved by lateral incisions in the dura.

Puncture of the Spinal Membranes in the lumbar region for the relief of intracranial tension continues to receive a large amount of attention, more particularly on the Continent, but the results have been far from satisfactory. The subject was fully discussed at the International Medical Congress at Moscow, in 1897, and in addition Monti,[12] Stadelmann,[13] Mya,[14] Heydenreich,[15] Stowell,[16] Dana,[17] and Taylor[18] amongst others, have recorded their experience. It has been claimed that lumbar puncture is of both diagnostic and therapeutic value. In a few cases tubercle bacilli are said to have been found in the fluid removed, thus confirming the diagnosis of tuberculous meningitis, but in the great majority of cases the result of the examination has been negative. With regard to the therapeutic value, most writers say that lumbar puncture is of no benefit, but several claim to have given relief, and in two cases tuberculous meningitis is said to have been cured by it. In one of these cases (Mya) the diagnosis was confirmed by tuberculin injection; in the other case (Stowell) tubercle bacilli were demonstrated in the fluid removed.

It is well known that many brain-lesions cause death by pressure upon the respiratory centre. This pressure may arise quite suddenly and in a most interesting case recorded by Nicoll,[5] it came on during the earlier stages of an operation for supposed temporo-sphenoidal abscess secondary to ear disease. The patient's breathing gradually became shallower, and finally ceased, although the pulse remained good. Artificial respiration was commenced and was continued for a little over an hour, during the whole of which time there was not the faintest attempt at spontaneous breathing. It was then decided to open the skull at all hazards, and almost immediately this had

been done, the patient began to breathe, and soon afterwards he commenced to struggle. The later stages of the operation showed that there was a large malignant tumour growing from the petrous bone. The patient lived for two and a-half months after the operation. The value of this case lies in the fact that it shows that life may be prolonged in certain cases of pressure upon the respiratory centre by prompt relief of the intracranial tension; and further, it demonstrates the importance of resorting to artificial respiration in cases where sudden failure of natural breathing occurs in connection with brain lesions.

Cerebral Abscess.—Collins,[19] in reviewing the treatment of brain abscesses, considers that the mortality-rate has not fallen during recent years as it should have done. This he attributes to two causes: (1,) The lack of early recognition of the presence of abscess apart from its exact localisation; (2,) Because surgeons are not sufficiently assiduous in their search for the pus. He gives details of a large number of cases collected from various sources. The cases show a deplorable mortality, the most potent factor having been the failure to recognise the existence of abscess before it has produced either septic complications or profound exhaustion. Collins deprecates delaying the operation until the appearance of unequivocal localising symptoms, and also procrastinating by operating upon the mastoid after symptoms of brain abscess are present.

De Santi[20] records an instructive case of extradural abscess cured by operation, and makes some remarks upon the treatment of brain abscesses secondary to otitic trouble. The mastoid should be cleared out as a preliminary step. For draining the abscess cavity in the brain, he recommends a decalcified chicken-bone tube if the cavity is small, and a silver tube if it is large. He points out that it is much better to fill the exploring syringe with boracic lotion than with carbolic lotion; the latter, when mixed with a little blood and brain matter, produces a fluid very like pus, and may thus give rise to a false impression that the abscess has been reached.

Cerebral Tumours.—Both the diagnosis and the treatment of cerebral tumours continue to receive a large amount of attention.

The *localisation* of these tumours was the subject of a long discussion at the Neurological Society of London,[21] and of an elaborate paper by Dr. Byrom Bramwell.[22] Bramwell places tumours of the brain in the following order with regard to the certainty and constancy of localising symptoms: (1,) Tumours at the base of the brain with involvment of the cranial nerves; (2,) Pons Varolii and medulla oblongata; (3,) Centrum ovale, with involvement of the internal cap-

sule or the optic radiations of Gratiolet; (4,) Occipital lobe, involving the half-vision centre or the optic radiations; (5,) Motor area, giving rise to localised epileptiform convulsions; (6,) Cerebellum; (7,) Frontal lobe; (8,) Upper part of parietal lobe; and, lastly and most difficult to locate, (9,) Tumours of the temporo-sphenoidal lobe, especially if situated on the right side. The temporo-sphenoidal lobe he regards as *par excellence* "the silent area of the brain," localising symptoms being usually entirely absent. Tumours of the frontal lobe are more apt to produce mental symptoms than localised tumours situated elsewhere. Dr. Beevor[21] has found that mental changes with frontal tumours are usually present in intramedullary cases, but not in extramedullary cases. To diagnose on which side of the brain a tumour is situated, may be more difficult than to diagnose the part of the brain involved.

Some cases have been recorded in which the site of a tumour has been demonstrated by **Skiagraphy.** Church[23] reports a case of cerebellar tumour, and figures two skiagrams which show distinct shadows corresponding to the position of the tumour. The diagnosis in this case was confirmed by autopsy; the tumour, we are told, was a glioma about the size of a lemon, its central parts were very vascular, and there was evidence of both old and recent hæmorrhages. Obici and Bollici[24] are also said to have localised cerebral tumours by the X-rays.

De Paoli and Mori[25] are reported to have established not only the presence of brain lesions, but also their situation, by **Cranial Percussion,** in a number of cases. Carson[26] lays stress upon the so-called "cranial cracked-pot sound" as a symptom of cerebellar tumours. The sign is due to separation of the bony sutures from internal pressure caused by the accumulation of fluid in the ventricles. The latter is due to pressure upon the aqueduct of Sylvius or upon the veins of Galen, or both. Separation of the sutures does not involve such great force as might be supposed, especially in children. Carson records four cases of cerebellar tumour which presented this symptom, the diagnosis in three cases being subsequently verified by autopsy. The "cracked-pot" sound, however, may be produced by other conditions which increase the intracranial tension, for instance, hydrocephalus; and, moreover, it must be remembered that in children under three years of age or before the closure of the fontanelles, this sign has no pathological significance.

The TREATMENT of intracranial tumours was the subject of a discussion in the Neurological section of the Meeting of the British Medical Association in Edinburgh, 1898.[27] The discussion was

opened by Dr. David Ferrier, who gave the results of operations performed at the National Hospital for the Paralysed and Epileptic during the preceding ten years. Thirty-eight cases had been subjected to operation, and amongst these cases it had been found possible to remove the tumour in twenty (sixteen cerebral and four cerebellar cases). Three cases had died within a few hours or days of the operation, and seven within a few weeks or months. In four cases the late result was unknown, and in six cases life had been prolonged for one year or more (in two for over four years). The total mortality in all cases was 18 per cent. Amongst cases in which the tumour was actually removed, he estimated that there were 30 per cent. of complete, and in round numbers 50 per cent. of partial, recoveries. Some of the patients had been greatly relieved by the operation, although the tumour had not been removed. **Iodide of Potassium** in large doses often gave relief to the symptoms even in non-syphilitic cases. Dr. Beevor expressed the opinion that **Anti-syphilitic Treatment** should be carried out for six or eight weeks ; if no improvement occurred during that time, it was desirable to operate. Mr. Waterhouse said that he had most gratifying and astonishing results in cases where the tumour was irremovable, the patients' lives having been changed from a state of unendurable suffering to comparative comfort by simply opening the skull.

Oliver and Williamson[28] report two operation cases, in one of which the patient was alive and well four years after removal of an angiomatous growth from the motor area.

Hydrocephalus.—A number of cases have been recorded in which benefit has followed antisyphilitic treatment.

The relief of the intracranial pressure in these cases by puncture of the spinal membranes in the lumbar region, as first suggested by Quincke in 1891, continues to receive a considerable amount of attention, but the results have been extremely unsatisfactory.

Ferguson,[29] of Chicago, has attempted to establish permanent drainage of the cerebro-spinal fluid into the abdominal cavity in cases of hydrocephalus. In two cases he removed a piece of the arch of the fifth lumbar vertebra, and afterwards drilled a hole through the body of the vertebra into the peritoneal cavity. A loop of silver-wire was then passed through the opening to act as a drain, and the external wound was closed. In the first case death soon followed ; in the second case great relief was afforded, but unfortunately about three months later the child was attacked with broncho-pneumonia, which proved fatal.

A more scientific treatment is that which was carried out in three

cases recorded by Dr. Sutherland and Mr. Watson Cheyne.[30] The skull was opened, and a catgut drain, about two inches long, was introduced into the lateral ventricle, the free end of the drain being left in the subdural space. In hydrocephalus, there is a closure of some part of the channel through which the fluid secreted in the lateral ventricles passes into the subdural space where it is absorbed; in this operation we have an attempt to provide a fresh and permanent outlet for the fluid. Two of the three cases were relieved; the third died from measles a fortnight after the operation.

Epilepsy.—The results of the surgical treatment of epilepsy have not been so brilliant as one could wish. In cases of partial epilepsy this is probably due to the removal of the lesion having been deferred in most cases until irreparable and widespread damage has been done to the brain tissue. If the operation were performed earlier, there is every reason to believe that the results would be improved.

Braun,[31] of Göttingen, reviews the treatment of Jacksonian epilepsy. He suggests that when epilepsy has followed a localised skull-wound, the first operation should be confined to the skull and dura mater. If the fits continue, the more radical procedure, excision of the motor centre, corresponding to the part in which the fits commence, may be undertaken. The treatment of this condition has also been considered by McCosh,[32] who records a number of cases.

Jonnesco[33] again advocates **Bilateral Resection of the Cervical Sympathetic Nerves** in cases of epilepsy. In his earlier cases he resected the whole of the sympathetic chain on both sides of the neck, but more recently he has limited the operation to removal of the superior cervical ganglia. He has operated upon forty-five cases with the following results: Ten cases were cured, of which number five had been under observation for upwards of two years after operation; six cases were improved, two unimproved; six died shortly after the operation, and nineteen had not been under observation sufficiently long to justify any conclusions being drawn from them.

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BRAIN (Syphilis of). *C. F. Marshall, M.D.*

It has been said that, wherever may be the primary seat of syphilitic lesions of the brain, the symptoms, prognosis, and treatment differ only slightly. However, Teisser and Roux hold that it is sometimes possible to differentiate between arterial, meningeal, and gummatous lesions, although such a differentiation is often impossible owing to the co-existence of the different varieties. The authors have founded their views on three cases, one of each kind of cerebral syphilis.

(1,) ARTERIAL SYPHILIS.—With the exception of aneurysm and rupture of arteries, the effect of arterial syphilis is to cause a deficient blood supply to the brain, causing more or less extensive changes both functionally and organically. This causes motor, sensory and intellectual changes :—

(*a*,) *Motor Troubles.*—These consist in hemiphlegia, or more often monophlegia, affecting the whole or part of a limb. These very limited monoplegias, with complete flaccidity, occurring in a non-hysterical subject and one appearing to be in good health are almost characteristic of syphilis of the arteries. Rarely spasmodic paralysis, with stiffness, contractions, and exaggerated reflexes may be observed; but these are more suggestive of meningeal disease. Partial epilepsy is not so frequent as in the other forms. Tremors or chronic movements are rare.

(*b*,) *Sensory Troubles.*—Headache is less common than in gumma or meningeal syphilis and, when occurring, is not increased by pressure or percussion. Objective disturbances of sensibility do not occur, except in connection with destruction of the posterior part of the internal capsule from softening or hæmorrhage. Disturbances of the special senses are rarely observed. Optic neuritis is rare, while in meningitis and gummata it is frequent. Occasionally disease of the retinal vessels can be seen.

(*c*,) *Intellectual troubles* usually take the form of progressive enfeeblement of all the faculties without delirium. Hallucinations are absent. All forms of aphasia may occur, especially motor aphasia.

The *evolution* of the above symptoms is characteristic, and is

divided by the authors into two distinct periods : (1,) The period during which the nerve elements are functionally disordered without irremediable anatomical changes ; (2,) The period of unalterable lesions.

In the case of obliterating arteritis, so long as no special strain is thrown on the brain, it does its work fairly well. But if over-wrought in any way the ischæmia manifests itself in paralysis, aphasia, or slight intellectual trouble. What would have no effect on a normal brain is enough to extinguish the activity of an ischæmic one, or even to cause an epilepti-form attack.

At this period there are three symptomatic forms : (*a*,) A *paralytic* form, usually limited, very sudden in onset, but very complete and flaccid while it lasts, which may be for one to three days, when it may disappear. A complete hemiplegia occasionally occurs. All these paralytic accidents present the same characters, viz., flaccidity, abolition of reflexes, and absence of objective disturbances of sensation ; (*b*,) An *aphasic* form which may be of any kind, but is usually motor. It is transitory, and often lasts only a few hours. It sometimes follows overwork of the implicated centre, *e.g.*, word blindness may follow prolonged reading. This aphasia is often combined with paresis of the side of the face and the right upper limb ; (*c*,) An *intellectual* form, which shows itself by depression, loss of memory and general mental enfeeblement.

If there is peri-arteritis with aneurysms superadded, and these press on a cranial nerve, the diagnosis is difficult because basal meningitis will be suspected. Ophthalmic migraine, transitory ocular paralysis, and general disturbances of nutrition also occur during this—the curable period. Fever has also been noted.

In the period of incurable lesions there is no longer a condition of ischæmia. The arterial obliteration has been completed by a thrombus and has produced softening of the brain ; or the infiltrated walls of the artery may have ruptured.

In making a diagnosis of the lesion, the absence of all irritative phenomena will exclude meningitis and gummata.

(2,) Syphilitic Meningitis.—This may be secondary to disease of the cranium, or of the brain ; or primary, invading the cerebral substance secondarily. The authors only deal with cases in which the lesions remain meningeal, and omit mixed forms, as well as cases of pachymeningitis hæmorrhagica, which may have a syphilitic origin but the symptoms of which depend upon hæmorrhage rather than inflammation. This leaves three forms of meningeal syphilis, viz., gummatous infiltration, miliary gummata, and simple inflammatory meningitis.

In meningeal syphilis we have the opposite condition to that in arterial syphilis, viz., irritative phenomena predominating over those of defect :—

(*a*,) *Motor Symptoms.*—These consist in epilipti-form attacks and spasmodic paralysis. The latter is never flaccid, is more diffuse, less complete, and affects more muscles than is usual in arterial syphilis.

(*b*,) *Sensory Symptoms.*—Headache is usually present, and is severe, especially at night. It may lead to delirium, suicide, or homicide. In severe cases it is due to compression of the brain from meningitis of the ependyma. It is aggravated by percussion of the cranium. There may be pains in the limbs and trunk due to cortical irritation. Lines of hyperæsthesia may be found, and rarely there is complete anæsthesia. These phenomena are permanent, and thus differ from the transient symptoms of arterial syphilis.

Affections of the special senses are frequent. Oculo-motor troubles, from compression of the nerves ; homonymous hemianopsia, or even amaurosis, from compression of one or both optic tracts, with abolition of the pupil reflex ; or, most characteristic of all, heteronymous hemianopsia, usually bi-temporal from compression of the chiasma. There may be optic neuritis, with marked inflammation and abundant exudation along the vessels. This differs from the choked disc of intracerebral gumma. More rarely there is atrophy of the disc. Anosmia and deafness occasionally occur. In fact any of the cranial nerves may be compressed.

(*c*,) *Intellectual Symptoms.*—Aphasia may occur, but is less complete and more permanent than in arterial syphilis. Delirium is frequent and active, and may resemble acute mania. Hallucinations are frequent. There is rarely weakening of intelligence : this is in contrast with the progressive tendency towards dementia of arterial syphilis. The general nutrition is gravely interfered with.

In cerebral syphilis there may be considerable pyrexia (104° F.). This appears to be more common in meningitis, rather rare in arterial syphilis, and exceptional in gumma.

Meningitis may be acute or chronic, and each form differs according to its situation at the convexity, or the base of the brain :—

(1,) *Acute Meningitis.*—This is characterised by intense headache, repeated vomiting, and occasionally pyrexia. If it is basal meningitis, vertigo, mental symptoms, compression of the cranial nerves, polyuria, and bulbar phenomena supervene, ending in fatal coma. If the convexity of the brain is chiefly affected, phenomena of excitement predominate—noisy delirium, convulsions, and hallucinations. Coma occurs later, often combined with hemiplegia or monoplegia. Specific

treatment is useless in such cases, and it is doubtful if they are due to syphilis alone.

(2,) *Chronic Meningitis* is much more common. As in arterial syphilis two periods may be distinguished. In the first the symptoms

TABLE COMPARING THE SYMPTOMS AND EVOLUTION OF ARTERIAL AND MENINGEAL SYPHILIS.

ARTERIAL SYPHILIS.		MENINGEAL SYPHILIS.	
	ANALYSIS OF THE SYMPTOMS.		
General Character.	Predominance of the phenomena of defect over the irritative phenomena.	Predominance of irritative phenomena over phenomena of defect.	
Motor Symptoms	(*a*,) Frequence of monoplegias—flaccidity, abolition of reflexes. (*b*,) Rarity of partial epilepsy.	(*a*,) Rarity of flaccid paralyses; paralyses often incomplete, always accompanied with rigidity and contractures, involuntary contractions, exaggeration of reflexes. (*b*,) Frequency of partial epilepsy.	
Sensory Symptoms	(*a*,) Headache *sometimes absent*, more *diffuse*, not started by pressure or percussion of the cranium. (*b*,) Subjective troubles of sensation very evanescent (*c*,) Absence of hallucinations. (*d*,) Optic papilla usually normal. (*e*,) Sometimes syphilitic arteritis in the retina.	(*a*,) Headache is scarcely ever wanting, sometimes diffuse (ventricular effusion), sometimes localised and started by pressure. (*b*,) Existence in the limbs of severe pains of central origin. (*c*,) Frequency of hallucinations. (*d*,) Neuro-retinitis with marked inflammatory phenomena.	
Intellectual Symptoms	(*a*,) Importance of intermittent transitory aphasia. (*b*,) Enfeeblement of all the faculties without active delirium.	(*a*,) Violent active delirium. (*b*,) No notable enfeeblement of the intellectual faculties.	
	EVOLUTION AND GROUPING OF THE SYMPTOMS.		
Period of Curable Lesions	(1,) Arteritis Obliterans { (1,) Paralytic form. (2,) Aphasic form. (3,) Intellectual form. (2,) Periarteritis { The preceding forms with signs of compression by aneurysms.	Acute Meningitis { (1,) Of the base. (2,) Of the convexity.	
Period of Incurable Lesions	Apoplectic form { With Survival { Cerebral haemorrhage. Cerebral softening. Fatal { Thrombosis of one of the arteries of the base. Rupture	Chronic Meningitis { (1,) Of the base. (2,) Of the convexity.	

are slight and transient—an isolated epileptiform fit, sudden ocular paralysis, slight aphasia, etc. The lesion is then curable ; but when the headache is permanent, when optic neuritis and other symptoms mentioned above are present, treatment is usually useless. *Basal meningitis* is most common, and the usual results are due to compression of the cranial nerves which, associated with signs of compression of the crura cerebri or pyramids, give rise to all the varieties of alternate hemiplegia—hemianosmia, and hemiplegia ; homonymous hemianopsia, and hemiplegia of the same side ; anæsthesia of half the face, and hemiplegia of the opposite side ; paralysis of the sixth nerves, and hemiplegia of the opposite side ; hemiparalysis of the tongue, with alternate hemiplegia. Polyuria is frequent. The case terminates in coma, usaally with bulbar phenomena. *Meningitis of the convexity* causes irritability, motor, sensory, and intellectual. Paralytic strokes are frequent, but coma rare.

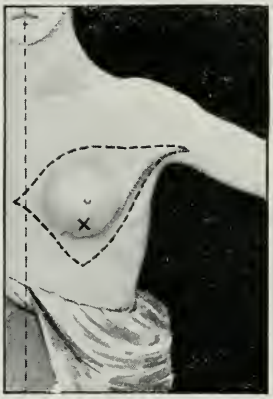
(3,) GUMMATA.—These lesions occurring in the substance of the brain simply give rise to symptoms similar to those caused by other tumours in similar situations.

REFERENCE.—[1] "Archives de Neurologie," Jan. and Feb., 1898.

BREAST (Cancer of). *Priestley Leech, M.D., F.R.C.S.*

Cheyne [1] reports again on the cases of cancer of the breast which he published in the Lettsomian Lectures for 1896. Of the cases that had remained free from recurrence for over three years in 1896, eleven were alive, one has since died from hæmorrhage from cancer of the intestine, one cannot be traced, and nine are alive and show no trace of recurrence. Of the forty cases, where three years had not elapsed since the operation, twenty-seven were free from recurrence in 1896, and of these eighteen are still alive and well, and one died free from recurrence ; or of thirty-seven patients who lived after the operation, nineteen or over 50 per cent. remained free from recurrence. The results are 51 per cent. of patients remaining well for over three years. The chance of recurrence after a year are comparatively slight.

He has had thirty eight fresh cases since, in which from one to three years have elapsed since the operation, and these added to the former cases, give ninety-nine cases, in which from one to nine years have elapsed since the operation, and of these fifty-six have certainly had no recurrence. If he had selected his cases Cheyne thinks he could have had over 80 per cent. of successes. He has only refused to operate on patients in whom it was evident that removal of the disease was quite impossible, either on account of (*a*,) Presence of



Cancer of Breast. X Shows the seat of disease.

internal deposits ; (*b*,) Of deposits externally in situations which were irremovable (*e.g.*, in ribs, in glands behind sterno-mastoid); or (*c*,) Extreme weakness. In cases where the diagnosis is uncertain and an exploratory incision is called for, Cheyne says the incision should not be made into the swelling, as infection by cancer cells may take place; he says the suspected swelling should *be excised along with an area of apparently healthy tissue around*, and it should only be cut into after its removal from the body, and from the vicinity of the operation. It is better done by someone who is not associated with the operation afterwards, and if the surgeon himself does it he should not touch it with his fingers and discard the instruments used. If the swelling prove to be cancer a sponge is placed in the wound and the incision sewn up before the breast is removed, the skin of the patient, operator, and assistant being again disinfected.

One of the most important parts of the operation is free removal of the skin, which should be carried out quite independently of the question as to how the wound is to be closed afterwards. The accompanying illustrations *(Plate II)* show the incisions which Cheyne thinks ought to be used in cases of tumours situated in different parts of the breast. Cheyne thinks the freedom from local recurrences in his cases have been due to free removal of skin. The skin should be dissected up with just enough fat to retain its vitality, and no muscular fibres should be exposed till just below the clavicle above, beyond the middle line in front, over the origin of the abdominal muscles below and over the edge of the latissimus dorsi behind. Cheyne only removes the pectoralis major muscle lying just below and on either side of the cancer ; he only removes the whole muscle where there is evident disease of the muscle itself. He thinks removal of the whole muscle is not necessary for exposure of the axilla. The posterior triangle of the neck is not opened up if the glands are not obviously enlarged unless it is found that there are enlarged glands in the fat behind the vessels running up towards the posterior triangle. Personally he thinks it is scarcely worth while operating on a patient when the cervical glands are obviously enlarged. In the after-treatment he thinks **Cotterell's Splint**[2] is of great value, but he finds it sufficient to place a large pad of salicylic wool in the axilla. A more comfortable plan is one suggested by Priestley Leech,[3] where the arm is placed at right angles to the body on a pillow and encircled with a broad sling made out of a pillow case fastened by a strong safety pin to the head of the bed.

Cheyne says the patient's best chance lies in the first operation. Simpson[4] gives a report of one hundred consecutive cases of excision

of the entire breast operated on by A. E. Barker; of these ninety were malignant, nine simple, and one doubtful. Five of the cases died, three of septic mischief (in the carbolic spray period); one of syncope, and one of pleurisy. Forty-three cases died of recurrence (local recurrence five cases, glandular fourteen cases, and internal generalisation twenty-four cases). The average duration of life in those dying from recurrence was twenty-eight months and seven days.

Barker does not remove the pectoralis major unless it is obviously infiltrated. Volkmann's three years' limit of freedom from recurrence as a cure is disproved by Barker's cases. Stiles[5] has an interesting paper on "On Dissemination of Cancer of the Breast." Butlin[6] has tried Halsted's operation since 1895, and has been satisfied with the results. A description of the operation with illustrations is given; it is also described with illustrations in the "Medical Annual," 1896, p. 196.

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BREAST (Disorders of). *Arthur Giles, M.D., B.Sc., F.R.C.S.*

Cracked Nipples.—Excellent results are reported by Maygrier and Blondel[1] from the use of **Orthoform**, with which the cracks are dressed. It renders the nipples anæsthetic during suckling, and keeps the cracks aseptic: when the powder is used it causes slight smarting. They used the drug successfully in forty cases.

The infant was put to the breast a quarter of an hour afterwards and sucked eagerly, as orthoform has neither taste nor smell. The anæsthesia persists for some time. MM. Maygrier and Blondel made trial of orthoform powder alone, of orthoform followed by a moist dressing of boric acid, nnd finally of a strong alcoholic solution of orthoform dropped into the cracks. They considered this last method the best, for it caused no more initial smarting, and it quite did away with infection of the breast, probably because the solution was able to penetrate into the recesses of the fissures.

A comparatively simple method[2] is the application of a 2 to 5 per cent. solution of **Permanganate of Potash,** repeated several times a day. Under the influence of the treatment the parts heal in about eight days at the outside. Each time that the child is nursed, the nipple should be washed with warm water.

REFERENCES.—[1] "Comptes rend. Soc. obst. de Paris," Nov. 10, 1898; [2] "Med. Press and Circ.," Aug. 31, 1898.

BRIGHT'S DISEASE. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

Although it has long been known to British practitioners in India and the Colonies that malaria is a frequent cause of Bright's disease, the subject has only attracted attention in Europe during the past year or two. Rempieci[1] from experience gained in the Santo Spirito Hospital, in Rome, states that albuminuria is present in about 6 per cent. of all cases of malaria, and may be due to acute or chronic nephritis or to waxy disease. He attributes the nephritis to the effect of the toxins, and not to the direct action of the malaria parasite. Where hæmoglobinuria occurs, this may set up nephritis. Œdema may be present in malarial disease without albuminuria.

In an advanced and fatal case of granular atrophy of both kidneys Grawitz[2] found the small intestine, from the jejunum downwards, covered with superficial ulcers, which were not associated with Peyer's patches, and resembled the effects of some corrosive fluid. He attributes them to the passage into the bowel of large quantities of urinary salts.

The skin eruptions of Bright's disease are not very common or well known. Rosenstein has described a papular rash like measles; erythema and erysipelas, especially upon the dropsical extremities, are fairly common; eczema sometimes occurs, and is described by Merk[3] as a circumscribed papular eruption, situated frequently upon the leg, intensely irritable and obstinate, and leaving behind it when healed smooth, dark brown, pigmented patches. Exfoliative dermatitis is a grave form of skin disease, often hæmorrhagic and tending to ulcerate, and usually occurs only a few weeks before death. A good example of this has been recorded by the Reporter.[4] Pruritus albuminuricus is a chronic form resembling pruritus senilis, and probably identical with that; urticaria albuminurica generally precedes the pruritus.

In the course of an interesting paper read at the Carlsbad Congress for Internal Medicine, Prof. von Noorden[5] took occasion to protest against certain conventionalities of practice in the treatment of contracting kidney which are not unknown in England. The first of these is the prohibition of red meat as contrasted with white for which he can find no scientific basis, and he points out that the highest creatin values are in the white meat of chicken and rabbit. He thinks if the quantity is duly regulated any kind of meat may be allowed. The second point is the routine prescription of large quantities of milk, mineral water, etc., with the object of "flushing the kidneys" and promoting the elimination of urea. He believes that these large quantities of fluid (3 to 4 litres) overload the heart and lead to

its dilatation. He recommends that not more than 1¼ to 1½ litres of fluid per diem should be allowed in contracting kidney, and he has satisfied himself that this restriction does not diminish the elimination of urinary solids or increase the total amount of albumin, although the percentage may be raised. He protests against the treatment of these cases by water and milk cures, and urges the importance of doing everything to preserve the heart's vigour. For this a course of Nauheim baths and exercises may be properly prescribed, but patients should avoid drinking the waters. These views are further supported by the observations of Bruner,[6] who states that in chronic Bright's disease without œdema there is almost invariably about twice as much as the normal proportion of water in the blood, a fact which is quite in accordance with the older observations of Christison, Owen Rees, and Rayer.

This polyplasmia, or œdema of the blood as it may be termed, stands in close and causal relation to uræmia. He points out that this supports the empirical treatment of uræmia by watery purgation, and, we may add, to an equal degree contradicts the modern suggestion of treating it by irrigation of the bowel, infusion of normal salt solution into the veins or below the skin, water diet, etc. Bruner also notes that the sodium salts in the blood are deficient, and supports the propriety of administering these.

While we are upon this subject we may mention the **Serum Treatment** of uræmia introduced by De Lignorolles,[7] which consists in the hypodermic injection of 3 to 6 drachms of defibrinated blood from the renal vein of healthy dogs or goats, a method of treatment which is "up to date," but lacks the confirmation of experience.

Tyson[8] says that opium and morphine are dangerous in Bright's disease, above all in contracting kidney, and that hypodermic injections of morphine should only be given for uræmic convulsions which depend upon acute and sub-acute nephriris. This was the opinion of Loomis whose position in regard to the question has been much misrepresented, while his authority it often invoked in support of practices he at no time sanctioned.

Francis[9] has recorded a case of puerperal eclampsia, the urine solid with albumin on boiling, successfully treated by hypodermic injection of **Morphine,** gr. ½; **Pilocarpine,** gr. ⅓; and ten hours later, morphine, gr. 1; and pilocarpine, gr. ⅓.

The hæmostatic drugs generally in use exercise little influence in controlling hæmorrhage from the kidneys; it is therefore noteworthy that Kramer,[10] Dehio, Einhorn, and Netchaef,[11] unite in speaking favourably of the effect of **Methylene Blue** on nephritis of a hæmor-

rhagic type, in doses of 2 to 3 grains, once, twice, or thrice a day. Under its influence it is claimed that the blood disappears from the urine, the albumin is greatly diminished, and the patient's general condition is much improved. Burn and Goff[12] have found 5-minim doses of **Tincture of Cantharides,** three times a day, stop hæmaturia, but they do not attempt to differentiate the form or forms of bleeding from the kidney in which this drug is useful; and it must not be forgotten that hæmostasis is a process which nature is very often able to effect unaided. Of late years it has been recognised, and rightly recognised, that there is such a thing as essential renal hæmorrhage not dependent upon any known lesion; still every means of diagnosis should be exhausted before such a conclusion is accepted, and Roosing[13] is right to protest against the too easy adoption of this view. He urges that in all doubtful cases, where the bleeding persists, an exploratory incision should be made into the bleeding kidney, because either stone or tumour may be present without symptoms. This is sound advice, although it is not always possible to recognise which is the bleeding kidney even with the cystoscope.

REFERENCES.—[1] "Policlinico," vols. ix, xi, pp. 197, 278; [2] "Med. Press and Circ.," Nov. 2, 1898; [3] "Arch. f. Dermatol. u. Syph." xliii, p. 469; [4] "Lectures on Renal and Urinary Diseases," p. 149; [5] "Internat. Med. Mag.," May, 1899; [6] "Centralb. f. inn. Med," May 7, 1898; [7] "Med. Press and Circ.," Feb. 22, 1899; [8] "Therap. Gaz.," 1898; [9] "Brit. Med. Journ.," 1898, vol. ii, p. 152; [10] "St. Petersburger med. Wochenschr.," May 16, 1898; [11] "Journ. de méd. de Paris," Oct. 16, 1898; [12] "Brit. Med. Journ.," 1898, vol. ii, pp. 808 and 1551; [13] Ibid., p. 1547.

BROMIDROSIS.

Synopsis.—(Vol. 1899, p. 331.) **Alcoholic Lotions,** *e.g.*, Borax, ℥v; Tinct. Benzoin, ℥ss; Alcohol, 1 litre, or 1 or 2% solution **Pot. Permang.**, or weak solution **Iron Chloride**, or 5% **Alcoholic Solution of Naphthol** with a little glycerin, followed by talc and salicylic acid powder. **Formalin** in 2% solution or powder. **Ichthyol**, internally and externally Disinfection of feet, stockings, and cork soles, with **Boracic Acid.**

BRONCHITIS.

Prof. H. P. Loomis, M.D., New York.

Dr. Leech[1] makes some very practical remarks on the treatment of bronchitis by drugs. For acute bronchitis of adults, **Acetate of Ammonia, Spirits of Nitrous Ether,** and **Ipecac.** or **Antimony** are commonly used, and no better combination can be employed, but an error is usually made in giving too small a dose of the two first-named drugs. He advises beginning with 3 drachms of liquor ammonii acetatis at a dose, and increasing to 6 drachms if the skin does not act freely.

Again, spiritus ætheris nitrosi should be given in drachm or 2-drachm doses. It should be mixed with water, because spiritus ætheris nitrosi rapidly decomposes, but this decomposition is rendered slower by the presence of acetate of ammonia.

Antimony in doses of $\frac{1}{20}$ of a grain is of most service where there is an abundance of small basic moist sounds; while ipecac. is better than antimony when there are dry *râles* all over the chest, with irritable cough. He believes that in children attacked with acute bronchitis, with a high temperature and a few concentrated *râles*, **Antipyrine** (as 5 grains, for a child five years old), is of more value than acetate of ammonia.

In cases of chronic bronchitis he advises **Ammonia, Senega, Squills** and **Ipecac.; Digitalis** and **Strychnine** to be given when there is evidence of failing of the respiratory or cardiac organs. The senega and squills to which, if necessary, strychnine may be added, should be given at greater intervals.

Patton recommends the following mixture for use when the acute symptoms are past, but the cough, with moderate secretion, still persists :—

℞	Sodium Iodide	grs. xc	Fluid Ext. of Grindelia	℥vj
	Codeine Sulphate	grs. v	Syrup of Tolu	q.s. ad ℥iij

(The dose is not stated.)

The recent contributions from German literature throw some light on the nature of the casts expelled in so-called fibrinous bronchitis. It has been found that the casts in such cases are mucous and not fibrinous. This confirms previous observations by Neelson. The disease may be more accurately described as a plastic bronchitis. Chemical examination also shows the absence of fibrin in these cases, and Habel noted that the casts were of acid reaction, and this to be the cause of the coagulation of the mucus. He believes that the whole process is analagous to membranous colitis.

REFERENCES.—[1] "Pract.," May, 1898; [2] "Clin. Rev.," June, 1899.

BUBONIC PLAGUE. (See "Plague.")

BURNS. *Priestley Leech, M.D., F.R.C.S.*

MacDonald[1] claims the following advantages for **Picric Acid** in the treatment of superficial burns: (*a*,) Simplicity of application; (*b*,) Painlessness; (*c*,) Rapidity of healing due to epidermisation under scabs, favouring of epithelial growth, and a minimum of suppuration; (*d*,) Absence of local irritation or of general toxic effect; (*e*,) A smoother, more natural cicatrix than that obtained with other methods.

The technique is as follows: The vesicles are punctured and accurately flattened out; gauze is dipped in a saturated aqueous solution of picric acid, squeezed fairly dry, and then placed over the burns; absorbent wool and a light gauze bandage further encourage evaporation, and thus retard the growth of any bacteria which may have gained access to the wounded surface. The dressing need not be renewed for four or five days unless there are clear signs of suppuration. The gauze is best carefully stripped off in the dry condition. Rubber gloves prevent staining of the surgeon's hands.

Alger[2] uses a combination of **Picric** and **Citric Acids**, as devised by Esbach for the detection of albumin; it consists of 10 of picric acid, 20 of citric acid, and 1000 of water. The vesicles are slit open with a knife, the fluid applied freely to their interior, and a soft gauze dressing applied.

REFERENCES.—[1] "Brit. Med. Journ.," May 13, 1899; [2] "Therap. Gaz.," June 15, 1899.

CALCULI IN CHILDHOOD. *Henry Dwight Chapin, M.D., New York.*

Dr. Schweiger[1] reports eight cases ranging from two and a half to nine years. In five the stone was in the bladder; in three, impacted in the urethra. The symptoms were very similar to the adult, being as follows: Painful micturition, retention, incontinence, hæmaturia, cystitis and albuminuria in one. Two of the patients developed a peculiar gait, similar to children with talipes varus, with the body bent forward. In two the stones could be palpated above the symphysis. For the removal of the stones the supra-pubic operation was performed. All made satisfactory recoveries. Operation in one case was refused, and the child died in two months.

Dr. J. H. Morgan[2] states the following propositions: (1,) In cases of boys and girls stones of moderate size should be dealt with by litholapaxy; (2,) Stones composed of oxalate of lime, or of such size as not to be readily grasped between the blades of a lithotrite should be removed by the lateral operation in the case of boys; (3,) The supra-pubic operation should be reserved for stones of very large size or inconvenient shape in boys and girls, or cases of calculus embedded in a saccule of the bladder or impacted in the mouth of a ureter.

REFERENCES.—[1] "Jahrbuch f. Kinderh.," B. xlv, H. ii, iii; [2] "Lancet," No. 3887, 1898.

CALCULUS. (See "Bladder" and "Kidney.")

CALCULUS (Biliary). (See "Gall Stones.")

CANCER. *Keith W. Monsarrat, F.R.C.S., E.*

The problem of the pathology of cancer is most advantageously discussed in the light of, and in relation with, our knowledge of the different modes of physiological cell multiplication. The process of cell multiplication is one and the same in kind in all tissues, but the conditions which call upon it for more or less activity may be distinguished under several headings.

The cells composing the tissues of the individual, with the exception of those which have reached a certain degree of specialisation, possess a capacity of multiplication which is regulated by the necessity for repairing waste and enabling tissues and organs to perform their routine functions. Histologically, in any tissue, the stages of the process can be studied exactly; cells of all ages are seen, the older being the structurally functional, the younger passing through an exact evolution towards this end. There is thus in every tissue the element of primitiveness—cells in a so-called embryonic condition, but cells which have their life history mapped out for them by some unknown vital influence. When we speak of these cells as embryonic we mean that they possess the comparative simplicity of structure which the earlier cells of the embryo show.

This continuous cell proliferation, to meet the requirements arising from wear and tear, we may allow ourselves, for the sake of clearness, to call the first method.

Secondly, we distinguish a physiological process of cell multiplication taking place in response to some impulse of the nature of a stimulation from within the individual economy, and which we may speak of as incidental—such is the process of hypertrophy of the breast which occurs at certain periods, and the hypertrophy which takes place in muscle from exercise.

Thirdly, there is what we may call accidental proliferation in response to stimulation from without. The degree and nature of this proliferation varies with the degree and nature of the stimulus, the cells stimulated producing their own kind only.

Reacting on all processes of cell multiplication we have the vital influence which makes for the structural integrity of all tissues and organs. Primarily, this is a controling and regulating influence; secondarily, it is an influence of repair. Its elucidation is bound up with the whole problem of *development* and *heredity*.

Cancer is essentially cell proliferation, indefinite in extent and of a perverted type, such that the cells concerned are capable of existing, spreading and developing beyond the limits of the tissue from which they take their origin.

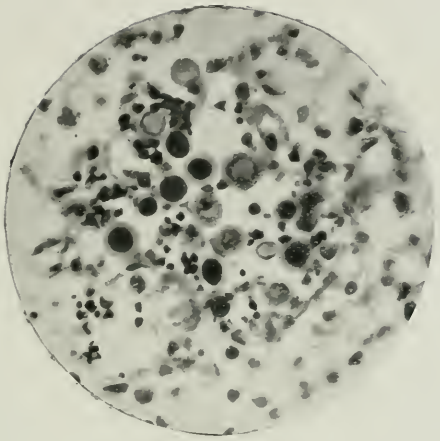


Fig. A.

Group of organisms in lung of guinea-pig, showing thickened capsules and endospore formation. × 350.

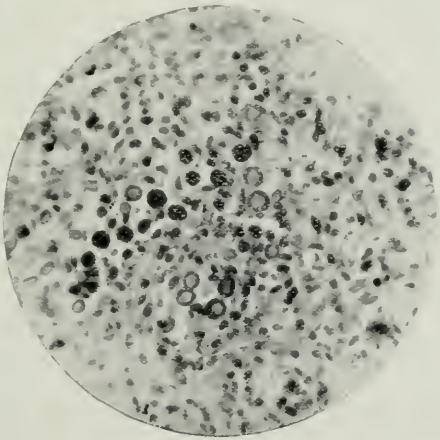


Fig. B.

Group of organisms in a secondary endothelial nodule in lung. × 250

What evidence have we that the partial suspension or incapacity of this *vital regulating influence* plays an important rôle in the process? Clearly two chief series of facts. In the first place the fact that carcinoma occurs almost exclusively in later life, when we would expect this equilibrating influence to have declined along with the general vitality. This, of course, does not apply to sarcoma, where we must assume some other factor. In the second place the facts pointing to the hereditability of the disease, which must occur through a transmitted suspension or instability of this influence.

Mr. Roger Williams [1] has recently drawn attention to some remarkable instances of this hereditary element in the disease, of which the following are notable :—

A woman, aged fifty-three, with uterine cancer, whose maternal grandmother, mother, and mother's sister all died of cancer of the uterus, and in addition two sisters of the patient herself.

A family known to Sibley, in which the mother and five daughters all died of cancer of the left breast.

A family history recorded by Broca. Madame Z. died of cancer of the breast, aged 60. Of her four daughters, two died of cancer of the breast, and two of cancer of the liver. The first daughter had three daughters all unaffected. The second daughter had seven children, five of whom died of cancer. The third daughter had five daughters, who all died of the disease. The fourth had one son only, not cancerous.

Other remarkable histories are given by Mr. Williams.

We have distinguished three main conditions of cell proliferation, and we can conceive of *Cancer* as a perversion of one or other of these conditions.

(1,) The disease might arise from the suspension of the *vital regulating influence* in relation to the proliferation which simply preserves the functional capacity of organs and tissues. In this case we have to assume that the cells of the tissues have a natural tendency to take on a cancerous character, only restrained by this influence, and for this assumption we have no warrant.

(2,) The disease might arise through an unregulated reaction to a stimulus from within. Here, also, we have to assume an inherent cancerous tendency in the cells concerned. We have also, however, to consider the possibility of a perversion of the stimulus itself arising in some unknown way. The results of the treatment of the disease by oöphorectomy are of the nature of evidence in support of some such origin, but it is still quite uncertain whether the influence which the removal of the ovaries has on the disease is in any sense special and

specific. These results are referred to again later. The frequency of cancer of the uterus and mamma about the menopause suggests also, assuming that the ovaries play a part in the stimulation to proliferation, that we may have to deal with something of the nature of a perversion of this stimulation. Obviously, our knowledge of the influences discussed does not admit of our considering in full this possible mode of origin of the disease.

(3.) In the third place the disease may arise in connection with the proliferation which follows stimulation from without. This view we are in a position to study more in detail : (*a*,) The stimulus may not be specific ; there may be many different kinds of stimulation capable of initiating the disease in the absence of the vital controlling influence, which, as we have remarked, reacts on all types of cell proliferation ; (*b*,) The stimulus may be a specific one, of the nature of a parasite.

(*a*,) The relation of cancer to mechanical injury and chronic inflammatory processes seems to argue a non-specific stimulus. Loeb[2] has recently made some observations on the regeneration of epithelium, which are striking in this connection. He has observed, as an early stage in the healing of a tissue defect, large protoplasmic bodies gliding over the surface and removing crusts. Beneath these masses epithelial cells were seen proceeding in from the margin of the wound, and often growing down into the connective tissue below and apparently restraining its growth. In these cells, removed some distance from the margin, mitotic changes and other evidences of activity were seen. This progress of the epithelial cells Loeb ascribes to stereotropism, and considers that in a certain degree the active mitoses of the remaining cells are due to it. The resemblance of this process, in certain respects, to the behaviour of carcinomatous cells is obvious. In the latter we also have epithelial cells wandering in response to some stimulus from their natural bed, making their way into the surrounding connective tissue and showing exceedingly active karyokinetic changes. These observations illustrate also the independent powers of epithelial cells, which is one of the most striking points in the extension of cancer.

We have a confirmation of this independent vitality of epithelial cells in the work of Ljunggren.[3] He found that pieces of human skin preserved in sterile ascitic fluid retained their vitality for months, and he successfully transplanted pieces which had been kept thus for a month. These pieces were examined after various periods of growth, and proliferation of the cells was observed. Now if we remove from the processes observed by Loeb, the equilibrating influence which makes for restoration, we have all the elements of

PLATE IV.

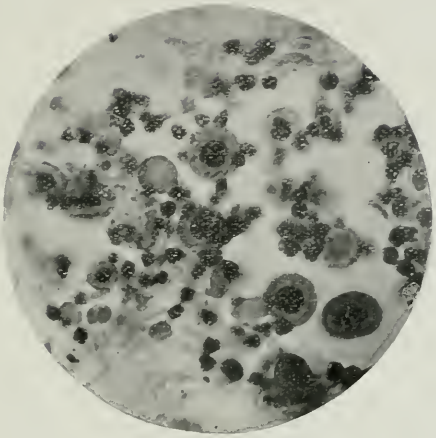


Fig. C.

Group of organisms showing capsules and spore formation. × 750.

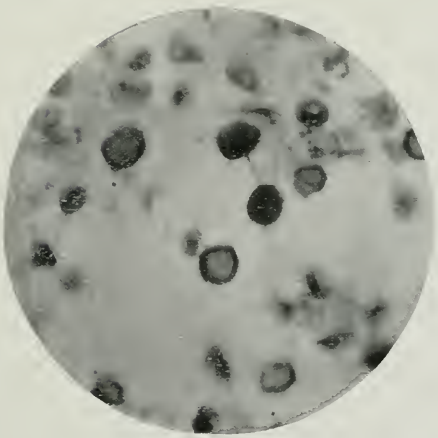


Fig. D.

Organisms showing filamentous connections between cells × 400.

an epitheliomatous process, at least, of the inception of such. The experiment performed by Lack[4] carries us one step further. He distributed through the peritoneal cavity of a rabbit the scrapings from the surface of the incised ovary. At death several months afterwards growths of a carcinomatous structure were found in the peritoneal cavity, and metastases in other organs. As contrasted with this, Beatson[5] has obtained entirely negative results in the following series of experiments on rabbits : (1,) Transplantation of healthy testicular tissue into the subcutaneous tissue ; (2,) Transplantation of a portion of the ovary of a cancer patient into the subcutaneous tissue ; (3,) Transplantation of cancerous human breast into the testicle ; (4,) Transplantation of a portion of an epithelioma of the cervix uteri into the testicle ; (5,) Transplantation of a portion of the same into the ovary.

The experiments of Lack would seem to indicate that, given actively germinating epithelial cells, the stimulus derived from a suitable nidus and the absence of topic control are sufficient to induce these to develop a cancerous type. It throws considerable light on processes of dissemination, less on the inception of the disease.

The experiments of Bellingham Smith and Washbourn[6] are capable of more than one interpretation. They have succeeded in transplanting sarcoma from dog to dog, and also in re-transplanting the tumours thus produced. This may mean that the cells of the growth are themselves the sole infective agents, in which case they may be added to all the above experiments as going to show that the stimulus to the disease is not specific, but that a variety of conditions are capable of initiating it if other factors are present. On the other hand, it may be that the transplanted portions include a specific cancer-producing agent ; which leads us to the consideration of the described cancer parasite.

(*b*,) Several additions to the observations on the parasite have been recorded during the past year. Plimmer[7] reports the isolation of an organism belonging to the class Blastomycetes from a case of rapidly growing carcinoma mammæ, in which it was seen microscopically to be present in large numbers. This grew in a cancer infusion to which 2 per cent. glucose and 1 per cent. tartaric acid were added. It retains virulence best when grown anaërobically, and appears in the medium as general cloudiness which gradually settles without scum. It measures from ·004 to 0·4 mm. Experiments on rabbits produced no result except in one case where the cornea was scraped and a culture rubbed in : examination of this subsequently showed proliferation and some downward growth from the surface. In guinea-pigs intra-peritoneal

injection produced growths of the character of endotheliomata with similar nodules in the liver, lungs, and kidney. From these nodules pure cultures of the organism were obtained.

Bra[8] records a series of experiments extending over a period of four years. By culture methods from a large number of tumours, carcinoma of the ovary, breast, parotid, uterus and rectum, sarcoma of the maxilla and epithelioma of the tongue and cervix uteri, he has isolated an organism which he places among the ascomycetes. He has employed two methods, insemination of portions of the tumours, and inoculations from the blood of cancer patients ; the first method has been the most successful. The medium used was cow's udder bouillon, and the culture appears as a scum and a sediment after five to eight days, incubation at 86° to 95° F. The organism is spherular and in other cases cylindrical, and multiplies chiefly by spore formation ; mycelia are formed. Bra has demonstrated this parasite in the blood of patients in a state of cachexia.

Inoculation of cultures subcutaneously produces tumours of the nature of fibro-sarcomata ; M. Bra's micro-photographs of these are, however, not very convincing. The micro-photographs of carcinoma of the mamma produced by inoculating a bitch are, however, entirely typical. Portions of these growths when again inseminated on to bouillon, gave cultures of the ascomyces. The positive results were obtained in rabbits and dogs ; inoculations into guinea-pigs proved inert. Sawtschenko[9] has recorded his conviction that the parasites previously found by him, and which he considered to be closely related to the malarial parasite, are in reality a form of Blastomyces. He rests his conclusions on the morphological resemblances, but does not commit himself as to the causal relationship of this organism to carcinoma.

An outline of the writer's own investigations on the subject may be given here. The method of making cultures adopted was as follows : Numerous incisions were made with a sterilised knife into the outlying parts of the tumours, and the scrapings from the margins of these were inoculated on to a medium consisting of wort-bouillon acidified with 5 per cent. tartaric acid. When the inoculation is successful a culture appears in about forty-eight to sixty hours at 37° C., and is in the form of a thin yellowish-white scum ; and a deposit at the bottom of the test tube. Microscopically this consists of spherical cells very variable in size (*Fig. D, Plate IV*) ; the smallest=3 micros, the largest up to 10 micros. The organism grows but slowly on the ordinary media, but readily both aërobically and anaërobically in the acidified wort-bouillon.

PLATE V

The method of spore formation in the organism, isolated by the writer from carcinoma mammæ.

SCOTT & FERGUSON, EDIN.
(MORRISON & G. 38 L.ne)

For experiment 1 c.c. of a forty-eight hours' old culture was injected into the peritoneal cavity of guinea-pigs. Positive results were hardly to be anticipated from this procedure as far as carcinoma production is concerned ; the organism must be brought in contact with epithelium to test its capacity for stimulating epithelial cells to cancer proliferation. Sanfelice [10] makes the observation, in reference to the organism with which he has worked, that it is capable of producing at one time a connective tissue, at another an epithelial new growth, according to the cell element with which it is brought in contact.

The inoculations produced endotheliomatous new growths in the peritoneum, and secondary nodules of the same type in the liver, lungs *(Fig. B, Plate III)*, spleen and kidney. These growths were used for the discovery of a distinctive and selective method of staining, and after many trials the following was found to be of this nature, and is recommended by the writer for the demonstration of the organism in carcinomatous tumours. Stain in carmine (lithium carmine is preferred) for twenty-four hours ; then for two minutes in a 1 per cent. watery solution of methyl violet ; then place in picric acid for another two minutes, dry with filter paper and decolourise with clove oil. The organisms are violet ; the tissues take the picro-carmine double stain *(Plate VI)*. A detailed account of the organisms is unnecessary here ; it must suffice to say that they possess a delicate capsule, and multiply by budding, but that under some circumstances the capsules become thickened and an irregular and peculiar form of sporulation takes place *(Plate III, Fig. A, and Plate IV, Fig. C)*. It is probably to be placed in the class Ascomycetes. *Plate V* illustrates the stages of sporulation.

Curtis [11] has carried out a series of culture experiments similar to those of Plimmer, Bra, and the writer, with negative results in all cases. He used carcinomata of the breast and testicle alone, taking elaborate precautions to prevent contamination, and both made inoculations on to media and transplanted portions into animals. The media were those in ordinary use in the laboratory. He believes that contamination has been responsible for the presence of the Blastomycetes found by many. We would remark that the number of experiments and the media used do not justify the author's claim to have established the fallacy of all the observations of those who have recorded the presence of a parasite demonstrable by culture methods.

In relation somewhat with the parasitic theory of the disease, we have the observations on topographical distribution. The opinion of Haviland, Noël, and others that cancer is most prevalent in low-

lying districts has received some confirmation during the last year. A committee was appointed by the Birmingham and Midland Counties Branch of the British Medical Association to investigate the subject locally, and their preliminary report[12] was issued in April last. The conclusions so far arrived at are, that the districts most affected are those which are low-lying and border on streams, and where the soil is ill-drained and the subsoil water near the surface. Many interesting details are given in the report, for which there is no space here.

An addition to the subject has also been made by Dr. Lloyd-Jones,[13] who has investigated the disease in Cambridge and the surrounding country. His conclusions agree in the main points with those of the Birmingham committee, but he adds the interesting detail that proximity to trees, especially large ones, is connected in some way with the prevalence of the disease. This connection has been previously noted by Fiessinger and Noël. On the other hand, Dr. Symons[14] has not found that locality has any influence on the prevalence of the disease in the town of Bath. It has, however, been pointed out that Bath is an unfavourable town for making reliable observations on the subject owing to the large number of imported invalids, and that probably a considerable fallacy of accidental location is introduced in this way.

Observations on the same subject come from Behla[15] and Fabre-Domergue.[16] Briefly, all these observations may be summarised as follows :—

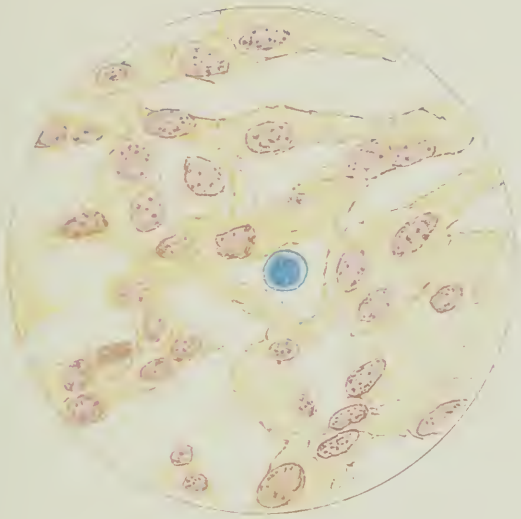
(1,) Cancer is more common in low-lying districts, especially those along the banks of sluggish streams liable to floods, and those contaminated by sewage.

(2,) It is more common on clay soils, and limestone districts are remarkably free.

(3,) Cases are specially numerous in well wooded districts, and possibly insects play some part in conveying the assumed infection.

Treatment.—The operative treatment of cancer is discussed under the headings of the various organs.

The two "caustic" agents most commonly used now are **Arsenious Acid** and **Formalin.** Gottheil[17] claims for the former a selective action on the cancer cells, and ascribes it to the fact that newly-formed tissue has less resisting power than normal structures when exposed to irritants. It is applicable to all skin cancers which have not established deep connections. Mitchell[18] reports a large sarcoma treated by formalin. Pieces of cotton-wool were soaked in the reagent, and the portions of the tumour around necrosed and cut away. There is considerable pain, and some inflammatory reaction and œdema of the



A specimen of the organism in a carcinoma of the breast.
(× 450.)

SCOTT & FERGUSON, EDIN^R
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surroundings. In cases of sharply defined, slow-growing carcinoma this method is not unusually successful in producing a necrosis which can be kept in check and continued until a healthy granulating surface is left.

It is claimed similarly for **Electrolysis** that its application has a selective action on the newly formed cancer cells. It also acts by causing necrosis. Melchior[19] recommends its use after the removal of the tumour. Suppuration and some necrosis is caused ; a current of 500 milliampères is applied for ten minutes. Melchior mentions the fact that Esmarch and others have reported cures by this method ; others, including Duncan, record relief of pain and of hæmorrhage, while Billroth is not alone in condemning the method altogether. It does not seem likely that it will commend itself to many surgeons.

Further successful cases by the method of injections of alcohol, and by Massey's method of diffusing mercury in the form of oxychloride through the growth by electrolysis, are reported in the journals. These two methods were detailed in last year's "Medical Annual."

The treatment by **Oöphorectomy** and **Thyroid Extract** has had some notable additions to its literature. Dr. G. E. Herman[20] read before the Medical Society of London a report of a case in which this combined treatment brought about the healing of a large ulcerating carcinoma of the right breast, which had twice been operated upon surgically, and in the same patient the disappearance of growths in the left breast and axillary glands which also had all the clinical signs of carcinoma.

Mr. Stanley Boyd[21] reviews seven cases on which he has performed the operation without administering thyroid. Of these, two had passed the menopause, and a satisfactory result was not obtained. Of the remaining five cases, the first remains cured after two years ; the second died from the disease two and a half years after the operation ; the third, operated on in May, 1897, had no recurrence a year later ; the fourth had a recurrence which again subsided, and she is still well nearly two years after operation, and the fifth died of the disease a year after treatment by this method.

In Dr. Beatson's original case where the disease recurred after three years' immunity, the nodules have remained stationary and now show no tendency to extend. Mr. Boyd holds the view that the improvement is to be ascribed to the oöphorectomy alone ; Dr. Herman, however, is able to show by statistics that the results of the combined treatment are better. The cases are, however, still few in number, and the point cannot be yet decided ; so far, the results eminently justify a further trial of the method.

M. Berrata has contributed an article on **Serotherapy** in neoplasms

to the fourth volume of M. Richet's "Travaux du Laboratoire." Cancer juice was obtained by reducing the tumour to pulp with glass and distilled water, filtering and centrifugalising the fluid obtained. Animals, chiefly dogs, were injected with this in amount proportionate to their weight, 5 to 10 c.c. in the case of the dogs. After a certain period the animal was bled or killed. M. Beretta has used the serum on seventy-three cases of advanced cancer. Pain is diminished by the injections, some softening of the tumour produced and the general bodily health improved. Locally, attempts at reparation are seen, sometimes portions of the tumours are thrown off by necrosis and healing advances to a certain extent. Tolerance to the effect of the serum soon appears to be established, however, and these efforts towards repair cease and growth again commences. On the whole, the serum thus prepared has some ameliorating influence, but normal serum produces the same effects, perhaps in a less marked degree.

For details of the results obtained by Coley's fluid, the mixed toxins of streptococcus pyogenes and bacillus prodigiosus, the reader is referred to the article on Cancer in last year's "Medical Annual." No important addition to the subject has been made during the last year.

REFERENCES.—[1] "Brit. Med. Journ.," Nov. 26, 1898; [2] "Arch. f. Entwickelungsmch. d. Organ.," 1898, vi, 297; [3] "Nord. Med. Ark.," n. F. ix, Heft. 2 i, 8; [4] "Journ. of Path. and Bacter.," vi, 2, p. 154; [5] "Brit. Med. Journ.," 1899, i, 399; [6] Ibid., 1898, ii, 1807; [7] "Centralb. f. Bakter.," No. 23, Bd. xxv; [8] "Presse méd.," 1899, i, 87; [9] "Centralb. f. Bakter.," Bd. xxv, No. 14, 502; [10] "Zeitsch. f. Hygiene," Bd. xxix, Hft. 3, p. 491; [11] "Presse méd.," 1899, i, 117; [12] "Brit. Med. Journ.," April 1, 1899; [13] Ibid., April 1, 1899; [14] "Public Health," Dec., 1898; [15] "Centralb. f. Bakter.," Bd. xxiv, 21; [16] "Les Cancers Epitheliaux," Paris, 1898; [17] "Ann. Surg.," May, 1899; [18] "Brit. Med. Journ.," 1899, i, 337; [19] Ibid., 1898, ii, 1420; [20] Ibid., 1899, i, 1088; [21] Ibid., 1899, i, 257.

CANCER OF UTERUS. (See "Uterus.")

CARBUNCLE.

T. Colcott Fox, M.B.

Rushton Parker[1] points out that the evils to be feared from carbuncle may be classed under two heads: (1,) Pain; and (2,) Septic poisoning; to the exhausting effects of one or other, or both, of which fatal cases are due. He continues to advocate **Operative Total or Palliative Extirpation** by excision and scraping as a protection to life in severe cases, and as saving both pain and time in all.

The alternative treatments are: (1,) **Palliative Expectation;** and (2,) **Free Incision.** Incision is a severe operation requiring an anæsthetic; it does not relieve pain, nor does it do anything to prevent or arrest septic poisoning; indeed, it may foster the latter.

Manley[2] describes the treatment he has used during the last five years in fifty cases. It consists in injecting into the diseased tissues an 80 per cent., or even 90 per cent., solution of **Carbolic Acid.** At an early stage 2 or 3 drops may be sufficient, but later 15 to 30 drops are needed. The earlier the injections are used, the more effective they are. The skin is rendered anæsthetic with ethyl chloride, and then the hypodermic needle is passed into the carbuncle and a little fluid injected; the needle is then *partly* withdrawn and passed in a different direction, but only one puncture is made through the skin. One injection generally suffices for a cure, but a second or third may be required. Care should be taken not to inject into a blood-vessel nor to injure a nerve. The results are very good, and the relief from pain is rapid. No symptoms of poisoning were produced.

REFERENCES.—[1] "Brit. Med. Journ.," p. 1604, Nov. 26, 1898; [2] "Ind. Med. Rec.," Dec. 16, 1898.

Priestley Leech, M.D., F.R.C.S.

Ashe[1] reports a serious case of this disease where, in spite of incisions and other treatment, the carbuncle continued to spread. He then injected **Anti-streptococcic Serum**, and within twenty-four hours improvement set in; three doses were injected and the patient recovered. Carbuncle is supposed to be caused by staphylococcus pyogenes aureus, but it may also contain streptococci. In cases that are not improving the serum is certainly worth a trial.

REFERENCE.—[1] "Brit. Med. Journ.," Nov. 5, 1898, p. 1427.

CATARACT. *F. Richardson Cross, M.B., F.R.C.S.*

Herbert[1] (Bombay) is of opinion that the solutions usually employed for purification of the eye prior to operation on it, are not sufficiently strong to be effective. Following the practice of Bamber,[2] he thoroughly washes out the conjunctival sac with a 1 in 3,000 solution of perchloride of mercury before operating. He admits that this treatment sometimes causes some inflammation of the ocular tissues, but claims that in a long series of cataract extractions in which he has employed it, there was not a single case of septic infection.

Sattler[3] (Leipzig) has recently recommended a new operation for the rapid removal of the crystalline lens in soft cataract, or in cases of high myopia in young patients. This consists in making with a curved keratome an incision 6 to 8 mm. long, and 1·5 to 2 mm. from the corneal margin, then freely tearing the anterior capsule and lens with a sharp hook, and evacuating as much of the lens substance as possible, by pressure. He claims that in patients treated by this method, fewer operations are necessary, there is less risk of glauco-

matous symptoms arising from swelling of the lens, and the duration of treatment is much shortened.

Amenabar[4] has devised a new instrument for the treatment of soft cataract by suction. It consists of a tube for insertion into the eye, made of glass which can be more certainly rendered mechanically pure and aseptic than the silver one hitherto employed in all the modifications of Teale's instrument, and in which the transit of the lens' substance can be accurately watched, attached by means of fine india-rubber tubing to a small ball syringe. The special feature of the instrument is a metal clamp controlling the tubing. The ball syringe is partially exhausted, and is kept so by clamping the tubing. By means of a delicate lever the pressure of the clamp upon the tubing can be lessened, when the ball will expand, thus sucking the lens substance into the glass tube, which has previously been introduced into the eye. The glass tubes appear somewhat coarse in comparison with the silver ones hitherto in vogue, but in practice this may prove to be no disadvantage; moreover, delicate as the lever clamp is, the amount of suction produced through it would appear to be less perfectly under control than that by the mouth, in Teale's original method. There are obvious objections to using the mouth, but on the other hand, the ball syringe and india-rubber tubing would not seem to be easily kept thoroughly aseptic.

REFERENCES.—[1] "Trans. Ophth. Soc.," vol. xviii, p. 314, and "Ind. Med. Gaz.," 1898; [2] "Trans. Ind. Med. Cong.," Calcutta, 1894; [3] "Trans. Ophth. Soc.," Heidelberg, 1898, p. 207; [4] "Trans. Ophth. Soc.," vol. xix, p. 292.

CATARRH (Post-nasal). (See "Nose.")

CEREBRAL ABSCESS. (See "Brain.")

CEREBRAL TUMOURS. (See "Brain.")

CEREBRO-SPINAL MENINGITIS (Epidemic), (Cerebro-spinal Fever).
Edwd. Wilberforce Goodall, M.D.

The Cavendish Lecture, delivered before the West London Medico-Chirurgical Society, by Professor Osler,[1] deals with the etiology and diagnosis of this disease. Wentworth[2] gives an excellent clinical account. An exhaustive paper, concerned chiefly with the etiology, was read before the Epidemiological Society, on January 20th, 1899, by Bruce Low.

The most instructive portion of Osler's lecture is that in which the diagnosis is discussed. The author divides acute lepto-meningitis into two main divisions—the first consists of the primary forms; the second, of the secondary. Again, the primary forms are divided into

two classes : (1,) Cerebro-spinal fever, whether sporadic or epidemic, of which the cause is the diplococcus intracellularis ; and (2,) Pneumococcic meningitis, which is due to the pneumococcus. The secondary forms fall into four groups : –

(1,) Tubercular meningitis

(2,) Pneumococcic meningitis, in which the meningeal disease, though due to the pneumococcus, is secondary to (*a*) pneumonia, endocarditis, etc. ; or (*b*) disease or injury of the cranium.

(3,) Pyogenic meningitis ; here the meningitis is caused by various forms of staphylococci and streptococci, and either (*a*) follows local disease of the cranium or local infection elsewhere ; or (*b*) is the termination of various chronic maladies.

(4,) Miscellaneous ; where meningitis complicates some acute specific infection, *e.g.*, typhoid fever, influenza, diphtheria, etc , and is due to the specific organism concerned.

It follows, therefore, that the diagnosis of cerebro-spinal fever is often extremely difficult. The chief points are emphasised by Osler as follows : The onset is very abrupt : there is no constant type of fever, as shown by the temperature chart ; various rashes are common, herpes being the most common ; arthritis or periarthritis may occur ; the so-called "Kernig's sign" is usually present. "To test for Kernig's sign, the patient should be propped up in bed in the sitting position ; then, on attempting to extend the leg on the thigh, there is contraction of the flexors, which prevents the full straightening of the leg. On the other hand, in the recumbent posture, the leg can be fully extended. Many patients with meningitis are not in a condition to sit up, and the test can be equally well made by flexing the thigh on the abdomen, when on attempting to extend the leg, if meningitis be present, the limb cannot be fully extended. This sign is stated to be present in all forms of meningitis when the spinal meninges are involved."

Of **Lumbar Puncture,** Osler states that "during the past ten years no single measure of greater value in diagnosis has been introduced. We are now able, in a large number of cases, to make a prompt decision as to the existence of meningitis, and are further enabled to recognise the cause of the disease." Regarded as a therapeutic measure, Wentworth states that in a few cases temporary relief follows the puncture, but that no permanent benefit follows. Osler is apparently of the same opinion.

Cerebro spinal fever occurs in a *sporadic* as well as an epidemic form. The *post-mortem* records of most general hospitals furnish instances of cases of meningitis of the brain and spinal cord, for

which no cause (such as diseased bone) can be found. There is reason to believe that many of these cases are isolated examples of the epidemic disease; though apart from a bacteriological examination in each case, it is impossible to say that all of them are such. Of recent years, Still[3] has found in seven out of eight cases of the so-called simple posterior basic meningitis of infants a diplococcus very similar to if not the same as the diplococcus intracellularis. This form of meningitis differs considerably in its clinical features from cerebro-spinal fever.

TREATMENT.—Osler gives **Morphine** to relieve the pain, and **Sponges the Patient with Iced Water** when the temperature reaches 102·5° F. Lumbar puncture is of doubtful benefit. In two of his cases the spinal canal was opened, drained, and irrigated; but the patient's life was not saved. Lately, however, Rolleston and Herbert Allingham[4] adopted this measure in a sporadic case with success.

REFERENCES.—[1] "Brit. Med. Journ.," June 24, 1899; [2] "Lancet," Oct. 1, 1898; [3] "Journ. of Path. and Bact.," vol. v, 1898; [4] "Lancet," 1899.

CHAPPED HANDS.

Synopsis.—(Vol. 1898, p. 145.) ℞ Menthol, gr. x; Olive Oil, Salol. āā ♏xx; Lanolin, ʒjss; M. Apply twice daily. ℞ Lanolin, ʒiij; Glycerin, ʒiv; Boric Acid, ʒjss; Salol, ʒj; Menthol, gr. xv; Oil of Citronella, ♏iij; M. ℞ Emol Keleet, ʒij; Zinc Oxidi ʒj; Lanolin, ʒss; Vaseline, ʒss; Glycerini Plumbi Sabacet., q.s. ut ft. pasta. Apply at night.

CHIGGER INSECT (Pulex Penetrans). *James Cantlie, F.R.C.S.*

There is considerable dread in India that the chigger or sand flea will reach its shores. Originally met with in America it is now to be found in the West Indies, on the West Coast of Africa, and in China. The Government of India have framed regulations anent its exclusion. The female chigger burrows beneath the skin and deposits its eggs. The ova when matured are expelled through the aperture made by the insect in the skin, and falling to the ground inhabit the sandy soil, the dust heaps, and the fowl pens, etc. The spots on the skin ulcerate and give rise to troublesome sores. To prevent the evils caused by the insect, cleanliness of environment must be observed, shoes worn, and insecticides freely used. The insect may be enucleated by a needle, or destroyed by washing the part with chloroform, turpentine, mercurial ointment, etc.

CHILBLAINS. *T. Colcott Fox, M.B.*

H. Lewis Jones[1] claims excellent results for the use of **Electricity** in a case of chilblains of a severe type. An induction coil is used and the wires are attached to two metallic plates, which are placed at the

two ends of an ordinary earthenware foot-bath filled with warm water. The patient is instructed to use this bath at bedtime for ten or fifteen minutes whenever the slightest threatening of chilblains is noticed. The current is used as strong as it can be borne without discomfort, the effect being to make the feet warm with a glow which lasts until the patient goes to sleep. Any swelling or congestion of the toes quickly disappears, and all danger of serious trouble from a broken chilblain is warded off. Besides its use for the prevention of actual chilblains, the treatment may be used in cases where patients complain of cold feet The electric stimulation seems to improve the circulation in the extremities to an extent far superior to anything which can be obtained from an ordinary warm foot bath. A short course of electric foot-baths for eight or ten consecutive nights not only dispels chilblains which have already formed, but seems to produce an improved state of the circulation which renders the patient more or less chilblain-proof for some time after the baths have been stopped.

The following liniments have been recommended[2]: –

℞ Chloroformi	℥ij	Tinct. Benzoinæ Co.	℥ij
Lin. Belladonnæ	℥ss	Lin. Saponis	℥iij

This is to be applied on lint, *not to be rubbed in.*

L.M.D. in the "British Medical Journal" strongly recommends a liniment suggested in a book called "The Young Practitioner." Two versions are given, viz.: –

℞ Aconitiæ	gr. ss	Linimenti Potassii Iodidi	
Atropiæ	gr. ss	cum Sapone	℥ij
Spiritus Rectificati	℥j	Olei Amygdalæ Amaræ	♏iij
Morphiæ Hydrochl.	grs. ij		

Tere bene simul. Fiat linimentum cujus paululum (℈j to ℥ss) parti affectæ infricetur, nocte maneque.

℞ Linimenti Aconiti	℥jss	Olei Amygdalæ Amaræ	♏v
Linimenti Belladonnæ	℥jss	Vel Olei Lavandulæ	♏x
Tincturæ Opii	℥iij	Linimenti Saponis ad	℥ij

Misce, fiat linimentum de quo ℥ss ad ℥j ad partem dolorosam applicetur, nocte maneque.

REFERENCES.—[1] "Lancet," Jan. 14, 1899; [2] "Med. News," p. 288, 1899.

CHLOROSIS.

Synopsis.—(Vol. 1899, pp. 66 and 209. **Strophanthus Tincture.** When iron fails good results often follow a diet in which **Animal Proteids, Bone Marrow,** and **Dark Beer** predominate.

CHOLECYSTITIS.

(See "Gall Stones.")

CHOLELITHIASIS.

(See "Gall Stones.")

CHOLERA.

Synopsis.—(Vol. 1898, p. 149.) **Chrysoidin,** teaspoonful doses of 1 in 1,000 solution. **Kitasato's Anti-Cholera Serum.** To relieve cramps and vomiting (Chauvin) : ℞ Dil. Hydrochloric Acid, ♏xv ; Pure Pepsin Essence, Wine of Opium, āā ♏xx ; Peppermint Water, ʒiv ; Syrup of Orange Flower, ʒj. Sig.—ʒj hourly. For Cholera Morbus, Mathieu prescribes : ℞ Lactic Acid, ʒij to ʒiv ; Sugar of Milk, ʒij ; Boiling Water, 1 quart. M. Sig.—To be taken during twenty-four hours. **Intravenous Saline Injections** of six ounces of the following are slowly given : ℞ Distilled Water, 1 quart ; Sodium Sulph. ʒijss ; Sodium Chloride, ʒj. M.

CHOREA. *Henry Dwight Chapin, M.D., New York.*

Dr. J. H. Adams,[1] in connection with careful hygienic oversight, has had good results in the treatment of chorea from the administration of **Trional** and **Sulphonal.** Given in the proportion of 2-grain doses every four hours for a child of ten years, these drugs can be increased or diminished as the case may indicate. In utility these drugs stand next to the use of Fowler's solution and ahead of the bromides and strychnia.

REFERENCE.—[1] "Arch. Ped.," vol. xvi, No. 5, 1899.

COLLAPSE. (See "Surgical Shock.")

COLON (Inflammation of). *Samuel G. Gant, M.D., New York.*

There are few diseases more difficult to cure than membranous colitis, yet Dr. Lawrie [1] reports a case of ten years' duration cured in seven months by making an artificial anus in the groin, which was closed at the end of that time. In summarising he goes on to say that this disease has been treated by colostomy but a very few times. It might seem at first a somewhat heroic measure to adopt for the treatment of membranous colitis, but when we consider that a case may go on for many years with a gradual deterioration of health, and obstinately defy all medical measures, it will be recognised that the condition is a serious one and justifies a serious procedure for its cure. Moreover, the treatment is in entire accord with the surgical principle of physiological rest for diseased structures. In a letter from the family physician some time after the patient was discharged he says, "She appears now to be quite well, the motions are regular and painless, she has a good appetite and is gaining flesh rapidly, and I feel quite certain that if this operation had not been made she would have quickly succumbed."

REFERENCE.—[1] "Brit. Med. Journ.," vol. ii, p. 1426, 1898.

COLOTOMY (Lumbar). *Samuel G. Gant, M.D., New York.*

The late Lawson Tait,[1] in a very forcible article on lumbar colotomy, says : There came a boom on behalf of left inguinal colotomy, which was useless and has proved disappointing so far as I can learn.

Personally, I never gave any countenance to the inguinal method, save in one case, where I had abundant reason to regret it. I have had every reason to be perfectly satisfied with the older operation, so far as my own results were concerned. There were advantages in favour, as against the operation in the groin which seemed to me convincing, viz. :—

(1,) There were cases where the obstruction was not relieved.

(2,) Cases where the disease advanced into and above the opening which were not so affected following the lumbar method.

(3,) Eversion of the gut has been far more frequent and extensive than it ever is after the older operation.

(4,) The efficiency of the opening in preventing leakage is more satisfactory after lumbar than inguinal colotomy.

(5,) The gut is easy to locate in the lumbar method, and when missed it is usually by fine anatomists who go over it instead of at it in their endeavour to make an ideal dissection.

REFERENCE.—[1] "Lancet," vol. i, p. 1747, 1898.

CONJUNCTIVA (Disorders of). *R. J. Coulter. M.B., F.R.C.S.I.*

Arnold Lawson[1] gives results of the examination for *bacteria of two hundred normal conjunctival sacs.* The method employed was to rub a sterilised platinum loop all over the palpebral and bulbar conjunctiva, and then use it for inoculating a tube of Loeffler's blood serum. The results obtained were that forty-one tubes proved sterile, while in the remaining hundred and fifty-nine the number of colonies was, as a rule, small, and only thirty contained growths of pyogenic bacteria. The xerosis bacillus, on the other hand, was present in one hundred and eighteen cases, occurring ninety times as a pure culture. The writer considers that the sum of these facts points strongly to the conclusion that the conjunctival sac, probably chiefly by its epithelium, but also possibly in part by the lachrymal section, possesses great powers of resistance to the growth and life of pyogenic organisms; and that the conjunctiva is a more powerful antiseptic than any solution that can safely be applied to it.

The *diplobacillus of subacute or fibrinous conjunctivitis* (*v. infra*) was first described by Morax,[2] and later independently by Axenfelt. Eyre[3] has published the results of a recent investigation with regard to it. He describes it as a non-motile, non-sporing organism, 2 to 3 μ long, by 1 μ broad, possessing neither flagella nor a capsule. It grows only on media containing serum, and on them is easily replaced by involution forms. It does not produce gas or indol, but in the course of its growth induces a faintly acid reaction of the medium, and liquifies

inspissated blood-serum. It does not grow below 30°C, nor above 40°C, while it is killed by exposure to a temperature of 50° for fifteen minutes. It stains well with aniline dyes, and is not discolourised by Gram's method. Inoculation experiments on animals gave negative results, but the introduction of a pure culture into the conjunctival sac of a man, produced a typical attack of fibrinous conjunctivitis.

Neustätter[4] (Munich) describes *simple conjunctivitis* as including all those cases which do not come under the heading of blennorrhœa, diphtheria, or trachoma, nor prove by their clinical aspect or course the existence of a specific cause or distinct anatomic change. He says that it is met in forms varying from what is little more than a slight hyperæmia of the conjunctiva, to a greatly-thickened, fleshy-looking condition of the membrane, accompanied by secretion of pus, incrustation of the lid margins, and often ectropion of the lower lid, from implication of the palpebral fibres of the orbicularis.

Bacteriological examination has, within the last few years, resulted in the discovery among this large group of cases, of the following bacteriologically and even clinically well-marked forms :—

(1,) *Acute Contagious Conjunctivitis*, caused by the Weeks-Koch bacillus, characterised by swelling of the conjunctiva, especially of the cul-de-sac and of the caruncle, bright redness and swelling of the lids, severe pain and heat in the whole eye region, photophobia and lacrimation. These symptoms are due to the presence of a very fine small bacillus, found principally in groups in the cells, but also loose in the discharge. It is easily shown on cover slip preparations, becomes decolourised by Gram's method, is difficult to cultivate, and is not pathogenic in animals. This disease is very contagious, and must be distinguished from Graef's "schwellungskatarrh." The points of distinction are that in the Koch-Weeks conjunctivitis, the conjunctiva bulbi is usually not affected, and there are no hæmorrhages, while the micro-organism present in schwellungskatarrh is a short bacillus with pointed edges and a characteristic gap in the middle, which becomes coloured by Gram's method, and grows best in Fleischwasser, pepton agar, with 1 per cent. glycerin. The treatment of acute contagious conjunctivitis consists in isolation, antiseptic washes, and, when the secretion becomes purulent, astringents.

(2,) *Pneumococcus Conjunctivitis* is an acute disease. It has an incubation period of two days, and usually lasts from ten to twenty days. It is characterised by slight redness of the palpebral conjunctiva, with a very marked aborescent vascularisation of the ocular conjunctiva, slight ecchymoses near the corneal border, and moderate

swelling of the upper lids. The secretion is lacrimal rather than catarrhal, and contains floating muco-fibrinous flakes, which sometimes form complete false membranes. As long as the discharge continues, Neustätter states that the pus cells, and at times the epithelium cells, contain great numbers of diplobacilli, which can be differentiated from the pneumococci of Fraenkel only by the general absence of capsule. The treatment consists in cold antiseptic lotions, and the disease is much less contagious than Koch-Weeks conjunctivitis.

(3,) *Subacute or Fibrinous Conjunctivitis, or Blepharo-Conjunctivitis Angularis*, usually commences in one eye, the second being implicated in the course of a few days. The patient complains of pricking and itching of the eyelids, and of discomfort and lacrimation when working by artificial light. The lids are stuck together in the morning by a slight muco-purulent discharge, and the ciliary margin of the upper lid is sometimes a little œdematous. There is slight injection of the palpebral conjunctiva near the margin, and the lower cul-de-sac in some cases contains flakes of muco-fibrinous matter. At the end of a few days erythema of the lids sets in, the redness being often limited to the two angles. The caruncle also becomes injected, but the bulbar conjunctiva remains almost if not quite clear. The affection is caused by the presence of diplobacilli, which is found in the discharge, either free or inside cells.

His statements as to the nature of this bacillus are in practical agreement with those of Eyre, already quoted. The disease is very contagious, and tends to run a very chronic course, but yields readily to treatment with sulphate of zinc.

Other forms of the disease have been found to depend on the presence of the bacillus of ozæna, the micrococcus conjunctivæ minutissimus, staphylococcus, streptococcus, etc., but a considerable number of cases remain for which no definite cause has yet been discovered.

In all cases in which it is suspected that a conjunctivitis is of bacterial origin, benefit is likely to result from the exhibition of tonics, such as quinine, iron, and arsenic, but otherwise the differentiation of these forms is chiefly of importance in helping to check the spread of epidemics.

For the treatment of simple conjunctivitis in general, Neustätter recommends cold antiseptic washes in the acute stages. In chronic cases, which are not cured by the ordinary methods of treatment, he employs massage of the conjunctiva with a pad of cotton-wool, moistened with sublimate solution. This causes a shedding of the

epithelium of the conjunctiva, and should be repeated as soon as the effects of the first rubbing have passed off. At first it is very disagreeable, but patients rapidly become accustomed to it, and Neustätter claims that he has obtained good results by means of it.

Parinaud's Conjunctivitis.—Gifford[5] quotes cases of this disease, which was first described in 1889, and is characterised by rapid swelling of the lids, with more or less muco-purulent discharge, and the development on the tarsal and bulbar conjunctiva of large rounded granulations, between which small ulcers sometimes occur. The affection is invariably unilateral, and is accompanied by swelling and even suppuration of the lymphatic glands on the same side. Bacteriological examinations have led to no positive results, and the disease, which yields very slowly to treatment, appears to undergo a spontaneous cure in the course of some months.

Phlyctenular Conjunctivitis.—Axenfeld[6] has found that *strumous diathesis* was certainly present in one hundred and eighty out of two hundred cases of this disease. It is therefore a most important, and perhaps a necessary factor. Phlyctenules are, however, not a local tuberculous process, since animals cannot be inoculated with tubercle from them. They can certainly be produced by external irritants, such as injuries, overstrain of the eye, or catarrhal conjunctivitis. It might be thought that their cause was probably infection from without, chiefly by the staphylococcus. Axenfeld has examined sixty-four cases bacteriologically, and proved that this is not so. In thirty no bacteria were found at all, in the rest a variety of organisms, generally a few cocci or xerobacilli. Whether conjunctivitis accompanies the phlyctenulæ depends chiefly on the condition of the glands at the margins of the lids, though even when these are infected with staphylococci, the conjunctival sac is not necessarily infected secondarily. Lastly, an examination of the secretion from the conjunctival tissues showed that in hypertrophic strumous catarrh staphylococci are very seldom present.

Although in this country phlyctenular conjunctivitis would seem to be found almost invariably in children or young people, Herbert[7] (Bombay) says that in India a large number of cases occur in adults, more than one-third of his patients being over twenty years of age, while a few were over fifty.

Membranous Ophthalmia.—Snell[8] reports three cases of this disease. In the first, which occurred in a woman, aged sixty-five, the cornea was already destroyed when the patient was first seen, and although the condition of the eyelids improved rapidly under treatment with perchloride of mercury lotion, the eye was lost. Bacteriological examination

failed to demonstrate the presence of the bacillus of diphtheria. The second occurred in an infant, six months old, and under the influence of injections of **Diphtheria Antitoxin** rapidly recovered. In the third patient, a woman, aged twenty-six, the membrane was limited to the lower lid of one eye, and its diphtheritic nature was proved by bacteriological investigation. Complete recovery resulted under treatment with **Perchloride of Mercury Lotion** (1 in 5,000, and gradually increased to 1 in 500), and a mixture containing **Liq. Hydrarg. Perchlor.** and **Potassium Iodide.**

Diphtheritic Conjunctivitis.—Tamacheff[9] (Baku) has treated nine cases of this condition by thoroughly cleansing the lids with **Formalin Solution** (1 in 2,000) without removing the membrane, and then dusting the conjunctival sac thoroughly with sterilised iodoform powder, and applying a dressing. This was repeated every twenty-four hours. Careful attention was paid to the general health of the patients, and in all cases the corneæ were saved.

Gonorrhœal Ophthalmia.—Leber[10] treats this disease in adults by washing out the conjunctival sac three or four times daily with a solution consisting of 10 c.c. of a 1 per cent. solution of **Permanganate of Potash** in 1 litre of $\frac{3}{4}$ per cent. solution of salt. He is much pleased with the result.

Villard[11] uses **Airol** in an ointment of 2 to 3 per cent. with vaseline, in conjunction with frequent irrigation with solution of potassium permanganate (1 in 6,000), for the treatment of ophthalmia neonatorum.

Starkie[12] (Chicago) recommends **Electrolysis** for the cure of small *pterygia* which do not encroach much upon the cornea, and as a palliative measure in more advanced cases. He passes a fine platinum needle, connected with the positive pole through and beneath the growth near its apex, and employs a current of 1 to 3 milliampères for one or two minutes. This is repeated with the needle introduced 2 mm. nearer the base of the pterygium. The treatment acts by coagulating the blood and causing a mild adhesive inflammation, and Starkie claims that it avoids loss of tissue, is painless (under cocaine), does not incapacitate the patient, and stops the pterygium in its early stages.

Supra-renal Gland Substance in Conjunctivitis.—Dr. John Bower, of Cheltenham, states, in a private communication to the reporter, that he has had under treatment during the past nine months a very large number of cases of contagious muco-purulent conjunctivitis, which were mostly treated with argentic nitrate or protargol solutions. A considerable percentage remained in a half-cured condition until he commenced to use solutions of **Supra-renal**

Gland Substance of the strength of 8 grains to 1 drachm, when they nearly all got rapidly well. Dr. Bower has found supra-renal gland substance a valuable therapeutic agent in all congestive conditions of the conjunctiva, and a source of great comfort to the patients. In coryza and hay asthma he recommends the solution to be made from the fresh gland instead of from the dried powder.

New Preparations of Silver.—The therapeutic action of nitrate of silver is partly bactericidal and partly caustic. With a view to obtaining the former which is due to the metal, without the latter which depends on the acid, experiments have been made with various new compounds of silver. The chief of these are :—

Argonin,	which contains	4	per cent.	of silver
Argentamin	,,	6·35	,,	,,
Protargol	,,	8·3	,,	,,
Largin	,,	11·1	,,	,,

while Nitrate of Silver contains 63·5 ,, ,,

Protargol is a smooth yellowish powder, soluble in 50 per cent. of water, from which it is not precipitated by albumin, chloride of sodium or diluted hydrochloric acid. Darier[13] considers its action superior to that of nitrate of silver in superficial affections of the eye and lids, as owing to the absence of caustic effects it can be used more freely and penetrates more deeply into the tissues. He recommends the use of a 5 per cent. solution for eye drops, while for painting the lids he uses one consisting of 5 grammes of protargol dissolved in 10 grammes of distilled water. In severe cases he has obtained good results from insufflation of the pure drug upon the everted lids followed by massage of the eyeball. He has used the preparation in various forms of conjunctivitis, and speaks highly of its value in them and also in acute dacrycystitis, in which he has employed injections of solutions varying in strength from 5 to 20 per cent.

Largin has been used in the Bristol Eye Hospital, in a 5 per cent. solution with considerable success for the past twelve months. Its action in the various forms of conjunctivitis is reliable. Compared with protargol its action in solutions of corresponding strength is more pronounced but it is much less soluble. It is not so irritating as nitrate of silver, over which it appears to have definite advantages in suitable cases.

REFERENCES.—[1] "Brit. Med. Journ.," Aug. 20, 1898 ; [2] "Journ. de l'Institut Pasteur," 1896, p. 6 ; [3] "Brit. Med. Journ.," Aug. 20, 1898 ; [4] "Treatment," Feb. 23, 1899 ; [5] "Journ. Amer. Med. Assoc.," vol. xxx, p. 17 ; [6] "Trans. Ophth. Soc.," Heidelberg, 1897 ; "Ophth. Rev.," Nov., 1898 ; [7] Ibid., March, 1898 ; [8] "Med. Press and Circ.,"

Nov. 16, 1898; [9] "Centralb. f. prackt. Augenheilkunde," Nov. and Dec., 1898; [10] "Trans. Ophth. Soc.," Heidelberg, 1897, quoted from "Ophth. Rev.," Nov., 1898; [11] "La Clin. Ophtal.," Nov. 25, 1898; [12] "Journ. Amer. Med. Assoc."; [13] "La Clin. Ophtal.," Oct., 1899.

CORNEA (Disorders of). *F. Richardson Cross, M.B., F.R.C.S.*

It is generally held that parenchymatous keratitis is due to infection from the blood-vessels surrounding the cornea, but Mellinger claims to have proved by experiment that it can be caused by injury to the endothelium lining the posterior surface of the cornea, and Leber considers that such an origin of the disease is especially probable when Descemet's membrane has been injured by pressure from a dislocated lens or displaced iris.

E. von Hippel[1] (Heidelberg) claims that by **Staining with Fluorescein,** he is able to demonstrate the existence of various forms of parenchymatous keratitis, some of them depending on one of these causes, and some on the other. He made experimental lesions in the corneal endothelium of animals' eyes by means of a hook passed into the anterior chamber through the corneal margin, and found that the instillation shortly afterwards of a drop of solution of fluorescein into the conjunctival sac of an eye which had been so treated, was followed after an interval of from half to one minute by a deep green colouration of the deepest layers of the cornea. The staining was most marked over the surface which was uncovered by endothelium, but extended into the cornea for some distance around this area. It could also be obtained on subsequent days after the wound made by the hook had completely healed and quite ceased to show any green colour; and after a much longer period had elapsed than has been experimentally shown to be necessary for the renewal of the endothelium over the entire posterior surface of the cornea, indicating that the reaction may take place not only after loss of endothelium, but after such injury to a continuous endothelium as interferes with its physiological function.

To employ the method clinically, the pupil being dilated so as to provide a dark background for the stain, a drop of fluorescein solution is instilled into the conjunctival sac, which is washed out with a solution of biborate of soda one or two minutes later. The eye is then examined by daylight for an appearance similar to that seen in the animals experimentally treated, focal illumination being used only to exclude the presence of superficial staining.

Von Hippel has examined by this method thirteen cases of that form of parenchymatous keratitis which commences as a deep round central infiltration, composed of numerous fine lines and spots, associated

with dulness of the corneal surface, but without vascularisation in the earlier stages. With regard to these, he writes: "The significance of the fluorescein reaction can only be established with certainty when one can follow the same case from the commencement to the end of the disease. It is then seen with complete certainty that the green colour occurs only in the beginning of the illness, or if relapses (which are usually to be recognised by increased irritability of the eye) occur, one can follow from day to day the weakening of the reaction from a saturated green colouration, to a barely recognisable faint greenish tinge. It is to be emphasised that the appearance of the opacity does not necessarily show any marked changes after the cessation of the staining, and particularly that the surface of the cornea can be quite dull at a period when the reaction is absent. One can, from the facts stated, draw the conclusion that the parenchymatous keratitis in question starts from the posterior corneal surface, and that the primary opacity arises through the influence of the aqueous humour. Whether the chemical constitution of the aqueous is altered, or the endothelium is injured by some other cause, remains unsettled."

On the other hand, the examination of cases in which the keratitis spread from the edge of the cornea, and was accompanied by vascularisation, showed that the staining in them took place only where the disease was of old standing, indicating that the primary infection takes place peripherally and through the blood-vessels, while any lesions of Descemet's membrane which occur are secondary.

The reaction was also observed in congenital buphthalmos, in congenital exophthalmos with hæmorrhage in the anterior chamber, in the early stages of keratoconus, and in inflammatory glaucoma.

Interstitial Keratitis.—The notes of a case read by Mr. Juler,[2] at the annual meeting of the British Medical Association, at Edinburgh, in which *typical interstitial keratitis occurred as a result of acquired syphilis*, gave rise to an interesting discussion. Several ophthalmic surgeons had seen similar cases, the occurrence of which is probably more frequent than is usually believed. It is important to exclude from this group severe keratitis punctata, and corneal complications of uveal inflammations.

Since then, Lawford[3] has recorded cases of the same affection. He states that the disease is usually limited to one eye, and considers that it is usually less severe and of shorter duration than in the more common congenital form, while the prognosis is also better, as complete, or almost complete, restoration of the transparency of the cornea has resulted in most of the recorded cases.

Pseudo-membranous Keratitis is a disease which may be acute,

running its course in three weeks, or chronic with irregular acute exacerbations lasting for years. It may cause complete blindness, but some sight is usually retained. Dransart[4] believes that the affection may be due to infection with: (1,) Diphtheria bacilli alone or combined with pneumococci; (2,) Staphylococci or streptococci. He recommends as treatment removal of the membrane and applications of aristol or iodoform combined with injections of diphtheria antitoxin.

REFERENCES.—[1] "Trans. Ophthal. Soc.," Heidelberg, 1898, p. 67; [2] "Brit. Med. Journ.," Aug. 20, 1898; [3] Ibid., Oct. 28, 1899; [4] "Le Progrès méd.," 1898, No. 2.

CORYZA. (See under "Nose.")

COUGH.

Synopsis.—(Vol. 1898, p. 158.) Reflex coughs require **Bromides** and **Valerian** or **Strychnine**; coughs in gouty cases, with conjested uvula and pharynx, are best met by **Salicylate of Soda** and **Lithium Salts.** If due to laryngitis, avoid talking; **Inhalation of Cocaine, Benzoin,** or **Spray of Menthol,** 10% in fluid Vaseline. Spray of 5% **Hydrochlorate of Cocaine Solution** is useful. Counter-irritation over sternum by **Blister** or **Mustard Leaf. Oxymel of Squills, Compound Tincture of Camphor** and **Syrup of Tolu,** equal parts, form a useful linctus. One teaspoonful every three or four hours. ℞ Pot. Bromid, ʒj; Vin. Ipecac., ʒjss; Tinct. Belladonn., ʒjss; Syrupi Tolu, ʒvj; Aq. ad ʒiv. Sig.—ʒj to ʒij every three hours. **Antikamnia** and **Codeine,** in 5-gr. tablets, repeated hourly, often relieve irritable cough.

CRETINISM.

Synopsis.—(Vol. 1899, p. 221.) **Desiccated Thyroid Gland,** gr. j, daily in young cretins, up to grs. v. daily in old patients; and after myxœdema etc., disappear, 1 or 2 five-grain tablets per week are used; of Thyroid Extract ½ to 1 tablet of Merck's Thyroidine daily is given to patients under two years, increased to 1 or 2 tablets daily; older cases may begin with 1 or 2 tablets daily, increased to 3 or 4.

CROUP (Membranous) and DIPHTHERIA.

Henry Dwight Chapin, M.D., New York.

Dr. L. J. Matthews[1] speaks of the value of antitoxin in membranous croup. The author is willing to concede that in about 85 per cent. of cases of membranous croup examined the Klebs-Loëffler bacillus is present. Pathologically it would seem that membranous croup is simply diphtheria locally manifested in the larynx. When we come to the clinical side of the subject, how is it? Unfortunately for the children, membranous croup is found in localities other than those densely populated and where diphtheria is endemic. In the country, in smaller cities, towns, and villages, pseudo-membranous croup prevails, and its clinical characteristics are wholly unlike diphtheria, except only the symptoms which one would naturally expect—laryngeal obstruction. All these cases are attended with a frightful

mortality. The fact is that prior to the introduction of antitoxin in the treatment of this disease, the physician who was called to one of these cases, fully developed, expected it to die. In nearly all of these cases an examination of the throat will reveal no exudate. The hoarseness and fever gradually increase, and before very long slight laryngeal obstruction is observed, followed by complete suppression of the voice. After a greater or less length of time this obstruction becomes marked. The inspiration is prolonged and becomes laboured; the muscles of thorax and abdomen are called into increased action; there is precordial and intercostal depression on inspiration. Cyanosis supervenes, and unless relief is had the child dies from exhaustion, the result of its laboured effort to get air, and from carbonic acid poisoning. There are no symptoms of depression or septic infection so characteristic of diphtheria. The child dies from strangulation and not from systemic infection. These cases are, almost without an exception, sporadic; they are not infectious.

While the author maintains that diphtheria and membranous croup are not always identical, he has found that injections of antitoxin given early are beneficial in the latter disease. As an analogy, he states that while puerperal fever and erysipelas are different diseases, the antistreptococcic serum is of value in both conditions.

Dr. K. Millard[2] gives the following advantages of intubation of the larynx in diphtheria:—

(1,) The operation is simple once the knack of performing it is acquired.

(2,) It requires none of the ordinary essentials for an operation, much less the many special requirements essential for tracheotomy.

(3,) It is much more rapidly performed, requiring practically no preparation, whilst the actual operation should only occupy from fifteen to twenty seconds. It is, therefore, *the* operation for an emergency.

(4,) It does not require an anæsthetic—a very great advantage.

(5,) It requires much less assistance, two or even one intelligent woman being all that is necessary.

(6,) It does not require a good light. It can be performed almost as well in the dark.

(7,) As an operation it is attended with much fewer risks than tracheotomy. Secondary pneumonia is comparatively rare.

(8,) Less after-treatment is required.

(9,) Though unable to talk whilst the tube remains in, the patient can readily make himself understood in whispers.

Fig. A.—Section of wall of large dental cyst. **A** Thin regular lining of epithelium. **B** Connective tissue capsule. × 110, $\frac{1}{2}$ in. obj., N.A. ·4.

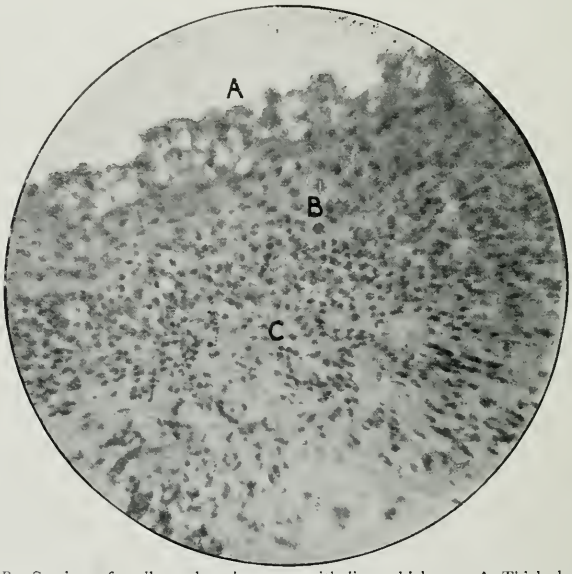

Fig. B.—Section of wall of dental cyst; epithelium thicker. **A** Thick layer of epithelium, cells large and degenerating towards centre. **B** Growing layer of cells. **C** Connective tissue capsule. × 175, $\frac{1}{2}$ in. obj., N.A. ·4.

(10,) There is no wound to heal up after removal of the tube. Convalescence is, therefore, more rapid.

(11,) There is no disfiguring cicatrix, nor fear of subsequent stricture of larynx.

(12,) There being no cutting and subsequent hæmorrhage, little difficulty is experienced in obtaining the consent of friends.

The disadvantages are: Difficulty in performing the operation, the possibility of pushing back false membrane, and the occasional necessity of rapid extubation. The advantages, however, are all in favour of the operation. This paper is of interest as showing a growing favour of intubation in Great Britain.

REFERENCES.—[1] "Therap. Gaz.," Sept. 15, 1898; [2] "Edin. Med. Journ.," vol. lxv, No. 516, 1898.

Synopsis.—(Vol. 1899, p. 222.) If Steam Inhalations and Emetics fail, use Nitroglycerin, $\frac{1}{100}$ to $\frac{1}{600}$ gr., repeated in five or ten minutes.

CYSTITIS. (See under "Bladder.")

CYSTS (Dental). *J. G. Turner, F.R.C.S., L.D.S.*

The etiology and pathology of these cysts, which have hitherto been commonly looked upon as chronic abscesses, have been investigated by the writer. Examination of over fifty cases shows that the cysts are *epithelial* new growths. The epithelium is stratified and of varying thickness, and, in some cases, ciliated. The surface is often almost papillary, and processes of epithelium dip down into the subjacent connective tissue. The layer of connective tissue surrounding the epithelium is also of new formation, and is rich in round cells (*Vide Plates VII and VIII, Figs. A, B, C, D*). The cyst contains a translucent, viscid, glairy fluid, holding crystals of cholesterin in suspension, often in such amount as to give a yellow colour to the fluid. Chemically the fluid consists of serum-albumin and serum-globulin, with some nucleo-albumin; but no mucin or mucoid substance.

These cysts always occur in connection with a *dead* tooth (that is, one in which, through progress of caries or other cause, the pulp has been exposed to such conditions as to kill it). The absorption of septic material in continuous small quantities causes a chronic inflammation of the dental periosteum (alveolar-dental ligament): in this are small masses of epithelium, remnants, most likely, of the enamel-forming organ, which are incited to growth by the chronic inflammation, and whose growth eventually results in a clinically recognisable cyst.

Hitherto, no case has been described occurring in connection with

a dead tooth of the temporary series; all cases the writer knows of have depended for their origin on a permanent tooth. When it is remembered how entirely the temporary alveolus is absorbed to make way for the teeth of succession this will not be wondered at.

The cyst occurs most frequently in connection with the first permanent molar, next with the bicuspids, then the upper incisors, and last the canines. The writer has seen no case connected with the lower incisors. This connection follows closely the incidence of caries, the lower incisors being notably less prone to decay than any other teeth.

Since a dental cyst is a tumour entirely dependent for its origin on dead teeth, it will be seen that it is one that can be absolutely banished from the list of diseases—an important matter, as in some cases the cyst degenerates into a malignant tumour.

The growth of the tumour may be watched by making sections, first of the thickened alveolar-dental ligament found round chronically inflamed dead teeth, and next of the small tumours, root-tumours, often found attached to the fangs of dead teeth after extraction.

The first will show rounded masses and cylinders of epithelium lying in inflammatory tissue; the second either a sponge-work of epithelium or a definite small cyst lined by epithelium and surrounded by mesoblastic tissue of new formation, in which the remains of an epithelial spongework will be most probably found (*Vide Plates IX and X, Figs. E, F, G, H*). The small cyst is formed by the occurrence of degeneration in the centre, while growth is taking place at the periphery. In the course of six months such a cyst might have become clinically recognisable.

Dental cysts occur in both jaws, and at any age at which permanent teeth are present—thirteen years is the youngest in the writer's experience—and though of inflammatory origin, are themselves free from inflammation or pain, except when, as not infrequently happens, the cyst itself inflames and suppurates.

In their growth they hollow out the spongy bone, and expand the hard outer shell, which is finally absorbed and perforated; but they push aside soft parts, such as nerve trunks, *without causing pain*, but causing, especially in the lower jaw, partial or complete loss of sensation in the teeth and other parts supplied by the nerve.

In the upper jaw, besides presenting as below described, they either push up the antrum till it is only a slit beneath the orbit, or forcing up its floor eventually perforate it so as to be separated from the cavity of the antrum by membrane only, and finally, if

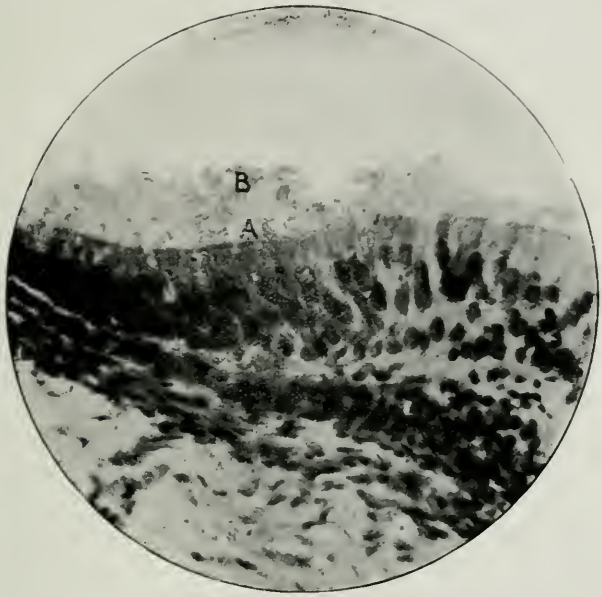

Fig. C.—Showing ciliated epithelium from a dental cyst. **A** Ciliated epithelium. **B** Products of secretion or of degeneration. × 350, $\frac{1}{8}$ in. obj., N.A. ·6.

Fig. D—Section of wall of dental cyst, showing papillary appearance of epithelial lining. **A** Epithelium. **B** Connective tissue capsule. × 70, 1½ in. obj., N.A. ·15.

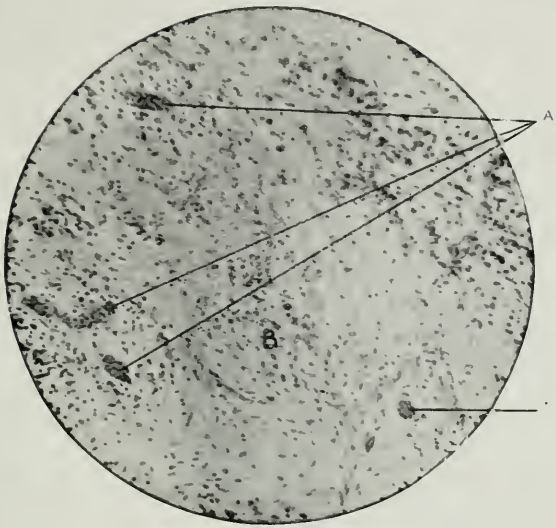

Fig. E.—Section of thickened alveolar dental ligament from near apex of tooth. A Masses and cylinders of epithelium. B Inflammatory tissue.
× 100, ½ in. obj., N.A. ·4.

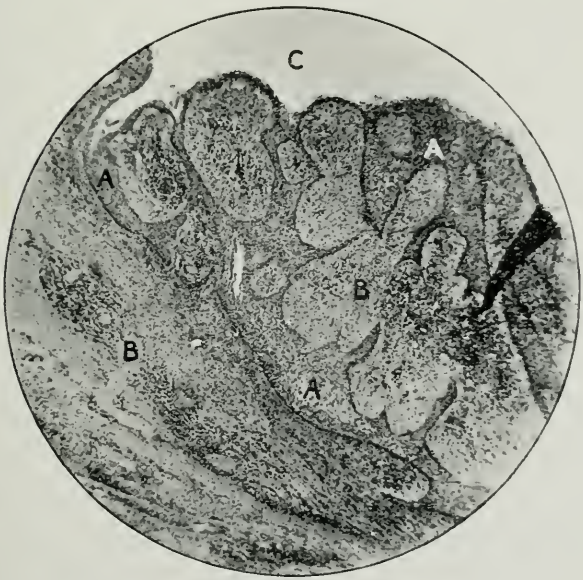

Fig. F.—Section of part of an epithelial root-tumour. C is placed in central cleft, where degeneration is commencing. A Trabeculæ of epithelial reticulum, central cells at A degenerating. B Mesoblastic tissue. × 32, 1½ in. obj., N.A. ·15.

the membrane does not give way, to occupy the whole cavity, giving the impression on opening that the tumour is an expanded antrum (*See Figs.* 2 and 3).

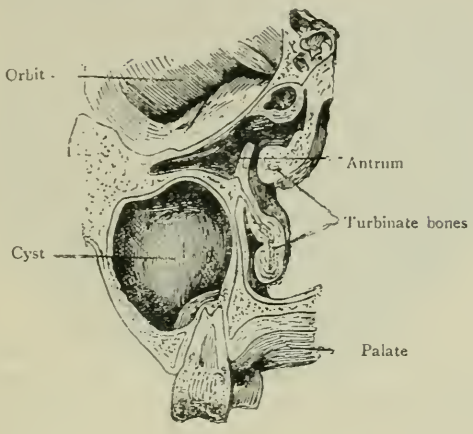

Fig. 2.

Dental cyst pushing up antrum till it is a mere slit beneath orbit. (Modified from Zuckerandl.)

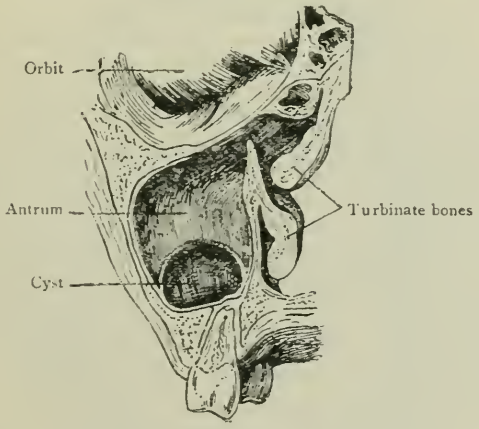

Fig. 3.

Cyst connected with a molar root presenting in the antrum, the floor of which is pushed in, thinned, and the bone perforated in places. (From a specimen in the Royal College of Surgeons Museum.)

The *hard palate* may also be perforated, but the usual direction of growth is outwards, so that the tumour presents in the alveolar-labial sulcus above the teeth, first expanding and thinning, then perforating the hard outer plate. In the lower jaw the same obtains, and the outer plate is the first perforated, though when the cyst is large both plates are destroyed.

When large enough thus to present in this way a typical dental cyst presents the following characters:—

There is a swelling which according to the stage it has reached yields on pressure.

(1,) The sensation known as 'parchment crackling,' due to the presence of the thinned and expanded outer plate.

(2,) Fluctuation at the most prominent part, where the bone has been entirely destroyed, with parchment crackling towards the periphery.

(3,) Fluctuation all over, with a bony edge to be felt at the periphery.

It is rather tense, of rather slow but uninterrupted growth, free from pain, local or referred, but perhaps causing some interference with sensation, especially in the lower jaw; and free from inflammatory signs; that is, it is not tender on pressure, and the mucous membrane will be found to move freely over it. It must be borne in mind that such a cyst may inflame and suppurate.

A dental cyst, though dependent on a tooth-fang for its origin, is entire, that is, the root of the tooth is outside it, separated from the cavity of the cyst by its wall of new formed fibrous tissue and epithelium. Hence the tooth may often be extracted without interfering with the cyst at all, and even if a piece of the wall be torn away and the contents evacuated, the rent will most likely heal, and fluid re-accumulate, and the cyst will go on growing after extraction of the tooth; indeed it may make its first clinical appearance some while after the loss of the tooth, having been in a very early stage at the time of the extraction. A dental cyst once started does not depend on any further stimulus from without to ensure continued growth, indeed arrest of growth is the exception rather than the rule.

DIAGNOSIS.—Such a cyst is often confounded with chronic abscess, and in the upper jaw with chronic empyema of the antrum or mucous cyst of the antrum.

To take mucous cyst of antrum first. Although mucous cyst of the antrum is very commonly found *post mortem*, yet, since it must first fill the entire antrum before it can make its presence felt outside it, and would then probably first push through the inner nasal wall as being the weakest, when it would run great risk of being ruptured, a mucous

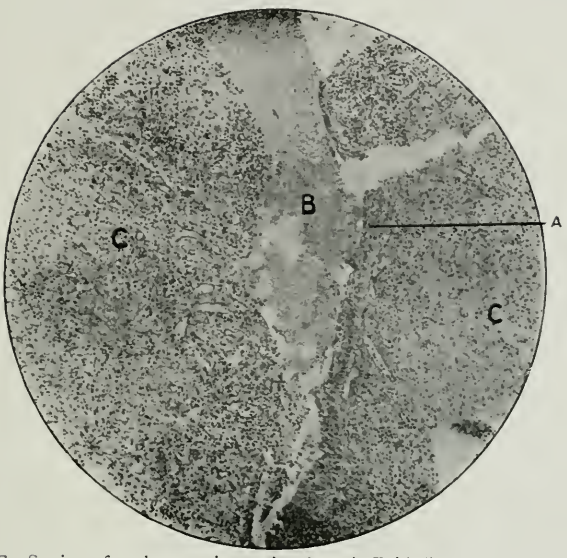

Fig. G.—Section of a degenerating trabecula. A Epithelial cells, enlarged and degererating towards B. B Products of degeneration. C Mesoblastic tissue. × 50, 1½ in. obj., N.A. ·15.

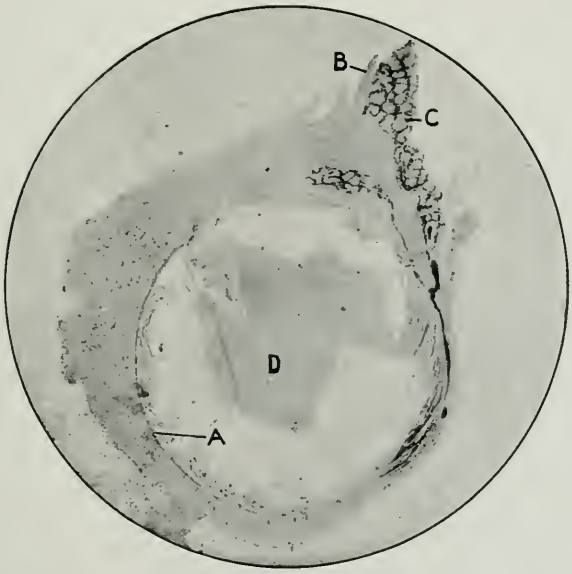

Fig. H.—Section of a small cyst attached to the apex of a root. A Epithelia lining. B Mass of epithelium. C Remains of epithelial reticulum. D Semi-solid contents. × 9¼, 3 in. obj., N.A. ·1.

cyst seldom gives clinical evidence of its presence. Being a simple cyst it will enlarge in the direction of least resistance, and would be most unlikely to destroy the bone so as to present in the palate. Hence fluctuation in the palate is a point against mucous cyst of the antrum, and, indeed, any external evidence of tumour growth is more likely to be due to a dental cyst.

Next, if it be remembered that with a dental cyst there is actual *tumour growth*, the first mistake, confounding it with a chronic abscess, can only be made in the early stages of the cystic disease. With a chronic abscess there is no tumour growth ; there is inflammatory swelling, more especially in the lower jaw, but in the upper even this may be less than might be expected.

In the case of chronic empyema of the maxillary antrum, the pus still finds an exit more or less free ; if it did not it would accumulate and behave as pus under pressure elsewhere ; that is, the inflammation would become acute and remain so till the pus had made an opening for itself ; but then there will be no expansion of the bone, with thinning and perforation as occurs with a dental cyst. Hence, the fact of finding thinned and expanded bone excludes every merely inflammatory or suppurative condition, and should prevent error when, as not infrequently occurs, the cyst when first seen is inflamed or suppurating.

It is in the early stages, before the cyst has reached such a size as to yield crackling, when there is only a bony swelling, hard and unyielding, that difficulty occurs. In such cases the presence of a dead tooth or history of its extraction must be enquired for, and it should be remembered that a dental cyst is by far the most common tumour of the jaws. In this early stage the tumour is often mostly composed of solid material, and the part that has broken down has broken down into a very thick fluid ; hence exploratory puncture will not assist much. The tumour must be explored at the time of operation before proceeding to any severe measure.

From a *dentigerous cyst* a dental cyst may be diagnosed by the presence of a dead tooth to account for it ; by the age of the patient, a dentigerous cyst being a disease of youth ; by the fact that all the teeth can be accounted for. It is worth remembering, however, that a dental cyst may occur in a jaw in which there are retained teeth, such as might start a dentigerous cyst, as in the following case.

Pat, ætat twenty-six, fluctuating swelling of right maxilla reaching as far forward as the lateral incisor. Canine teeth never erupted. Right first molar extracted ten years before, dead. On operating the canine was quite free of the cyst, which owed its origin to the dead first molar.

TREATMENT.—Dental cysts, being epithelial growths, inherit the same liability as other innocent epithelial growths to degenerate and become malignant. The manner in which the epithelium dips down into the surrounding capsule points in this direction; and their affinity to multilocular cystic tumours of the jaws, as having the same origin and as presenting in some cases microscopic loculi in their walls, points in the same direction (*Plate XI, Fig. I*). Hence they should always be treated as tumours elsewhere—efficiently eradicated.

This requires a general anæsthetic. The cyst is cut down on, and as far as possible dissected from, the soft parts, the outer bony wall is completely taken away with stout scissors and bone nibblers, and the cyst raised from its bony surroundings by an elevator. The cavity is packed to arrest bleeding, and thereafter syringed well, at least twice a day.

Gingival Cyst.—Connected with dead teeth there is another cyst having a life-history analagous to that of a dental cyst. It occurs in, or rather beneath, the mucous membrane of the gums, at a spot where the opening of a chronic alveolar abscess (gumboil) has been situated; the writer has named it gingival cyst, and has seen three examples of it. As the result of chronic inflammation set up by the constant passage of pus along the sinus, the masses of epithelium known as the glands of Serres, found free in the deep parts of the gums, are incited to growth, and following the same course as has been already described in the case of dental cysts, eventually produce a cyst over which the mucous membrane moves freely, and which is itself free of the bone. Such cysts are not common, but many occur in childhood or in adult life.

The illustration (*Plate XI, Fig. K*) shows a section of such a cyst which had recurred after simple incision and packing, but which was completely cured by free excision. The contents of the cyst were clear and glairy, like mucus. No cholesterin was noted in this, as in dental cysts.

CYSTS OF PANCREAS. (See "Pancreas.")

DACTYLITIS (Tuberculous). *Priestley Leech, M.D., F.R.C.S.*

Ménard of Berck[1] has some remarks on the treatment of this condition. The lesion is essentially in most cases an intra-osseous one, and the periostitis is secondary. The swelling is due for the most part to infiltration of the soft tissues and not to enlargement of the bone. It must be remembered that the four outer metacarpal and metatarsal bones have epiphyses at their proximal extremities, and that the pollex and hallux have not, and therefore in the latter cases

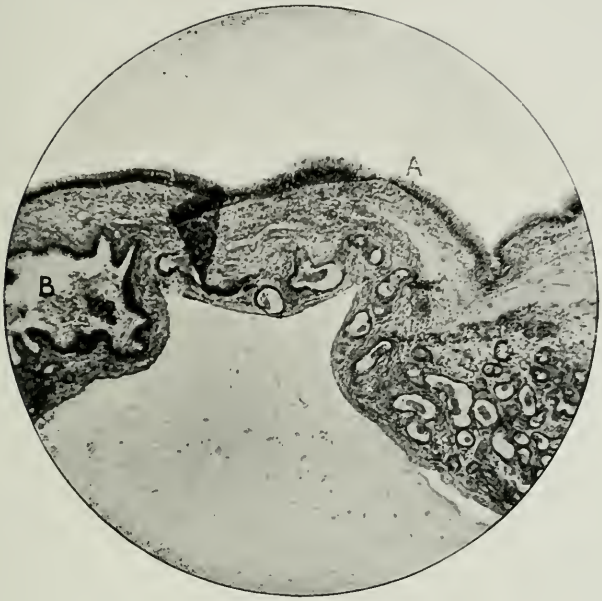

Fig. I.—Showing microscopic loculi in the wall of a dental cyst. × 43, 1½ in. obj., N.A. ·15.

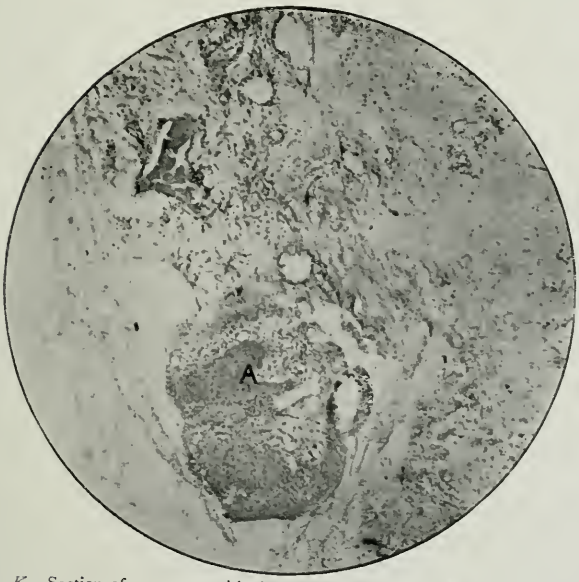

Fig. K.—Section of recurrent epithelial tumour of gum. A Mass of epithelium. × 66, 1½ in. obj., N.A. ·15.

the disease more easily spreads to the carpus and tarsus. In operating on the latter the articular cartilage must be protected, and removal of the disease be done thoroughly.

In the metacarpals and metatarsals the incisions should be made on the dorsum, but in the phalanges lateral incisions are best, and every vestige of disease should be scraped away with a sharp spoon; total subperiosteal resection is bad, as bone repair is nearly always imperfect.

REFERENCE.—[1] "La Tuberculose Infantile," Feb. 15, 1899.

DELIRIUM TREMENS. *James Shaw, M.D.*

Crothers,[1] speaking from his experience of several hundred cases, maintains that sudden and complete withdrawal of spirits is the first essential in the treatment of delirium tremens. In asylum treatment, either a **Hot Air Bath with Hot Showers and Free Rubbing,** or a **Hot Water Bath with Massage** is the first therapeutic measure. In private practice, hot tub-baths, free sponging with hot soap and water, and daily rubbings are required. Isolation with full control of the patient, either in his home or in an asylum, is essential, and the aid of strong attendants advisable. Next in importance to bathing is catharsis with calomel and salines. This should be active at first, irrespective of any apparent prostration which may follow. No food should be given until free action of all the eliminatory organs is established. Then hot and easily assimilated liquid foods are required at intervals, as a rule, of four or five hours. No narcotics should be given at any time, and tonics or stimulants only after the subsidence of the delirium and the establishment of the period of sleep and exhaustion; then nitrate of strychnine in $\frac{1}{30}$ grain doses, four times daily, or infusion of cinchona in drachm doses every four hours. Where bathing is impracticable the use of diaphoretic drugs, of which ipecacuanha is the best, is excellent. Mechanical restraint is to be deprecated, and the fullest liberty compatible with the safety of the patient and his surroundings should be permitted. If the patient is robust open-air exercise, if weak the freedom of a large room or hall, should be allowed. Illustrative cases are given.

Touvime[2] administered **Atropine Sulphate,** $\frac{1}{60}$ of a grain, subcutaneously, to each of eleven patients suffering from delirium tremens. In six of these the delirium was of a furious and in five of a mild type. Ten became calm after a single injection, and in fifteen or twenty minutes were asleep. In the eleventh case $\frac{1}{40}$ of a grain was given in the evening, but the patient still remained greatly agitated. On the

following morning, after a cold bath, he became quieter, and towards evening fell into a refreshing sleep.

REFERENCES.—[1] "Med. World," June 18, 1898; [2] Ibid., Oct. 22, 1898.

Græme M. Hammond, M.D., New York.

For this condition, Letullé recommends **Cold Baths** at a temperature of 72° F., for patients with high fever (105° F.). He gives an account of a patient who was immersed and thoroughly rubbed during the bath, which lasted thirty minutes. The talkative delirium persisted for twenty-five minutes, then he became calmer and visibly cyanotic. At the end of half an hour he was taken out of the bath in a stupor. He was rubbed dry, and artificial heat was applied. During the bath the pulse varied from 110 to 112; after the bath it remained at 108, but the temperature, taken by rectum, was 92° F. Stimulants were given, including six hypodermic injections of ether. At the end of an hour the temperature began to rise, and the talkativeness returned. Several small doses of morphine were given hypodermically, in all 1 grain in twelve hours. On the following day the patient was depressed but calm, and in a week he was quite restored. As digitalis, opium, chloral, etc., never produce rapid or decisive effects, he is in favour of treating all cases by baths at a temperature of 72° F., lasting from ten to fifteen minutes to two or three hours, according to the gravity of the case, and until there is complete cessation of the delirium and fever.

REFERENCE.—"Med. News," Oct. 7, 1899.

DENGUE FEVER. *James Cantlie, F.R.C.S.*

Staff-Surgeon Bassett-Smith,[1] R.N., draws attention to a mild form of dengue in Bombay, leading to great difficulty in diagnosis.

The earliest systematic accounts of dengue appeared in 1779, when it prevailed in Egypt and Batavia. Since then it has been occasionally met with in epidemic form in most parts of the globe. The disease is apt to be confounded with scarlet fever, measles (more especially rötheln), malarial fevers, and influenza. Bassett-Smith points out that in some epidemics a scarlatiniform rash occurred in 50 per cent. of the cases, whereas in others the presence of a rash was quite exceptional. Even the symptom of bone-ache, which has served to baptise the ailment break-bone fever, may be absent. It is evident that mild sporadic dengue, if there is really such an ailment, is well-nigh impossible to differentiate from febrile attacks so common in tropical countries. Examination of the blood will possibly eliminate malaria, but siriasis and a number of other conditions

and diseases are frequently diagnosed where dengue might be the cause, and *vice versâ*. It may be stated that we know of no positive diagnostic feature of dengue except when it occurs in epidemic form.

REFERENCE.—"Lancet," Jan. 5, 1897.

DERMATITIS BLASTOMYCETICA. *T. Colcott Fox, M.B.*

In 1894 Gilchrist demonstrated certain organisms in a case of supposed scrofulodermia, and he and others have added to their records of this organism in man and the lower animals.

Drs. J. Nevins Hyde, Ludwig Hektoen, and A. D. Bevan[1] made to the American Dermatological Association a most interesting contribution to the study of *Blastomycetic Dermatitis*. They collected the records of seven cases of this apparently rare disorder (six American), in which the organism has been recognised, cultivated and studied with scientific precautions and accuracy. In six the skin alone was implicated. The German case proved fatal. Five patients were men and two women, all in or near middle life, some with a faultless, others with a tuberculous, family history. In most the disease was chronic, lasting five to ten years. The disease usually began as a maculo-papule of reddish hue, which later suppurated. The regions of cutaneous involvement have been the ear, forehead, cheek, brow, lids, nose, neck, scrotum, thigh, leg, and the dorsum of the fingers, hand and wrist, whilst the regions of primary invasion are pre-eminently the dorsum of the hand and the anterior surface of the right leg.

Tuberculosis of the skin is the disease from which the blastomycetic dermatitis has to be distinguished, and clinically the difficulty is considerable.

The rarer verrucose types of tuberculosis of the skin (tuberculosis verrucosa cutis, lupus sclerosis, lupus scléreux) are those most closely simulated, but probably other forms are also to be met with. Vegetating syphilides and forms of epithelioma may also be mentioned for diagnosis.

The authors feel hopeful that the majority of cases will be cured. Surgical procedures are effective, and in one case iodide of potassium in full doses had surprisingly good results.

In Hyde's case the striking feature in the sections was the hyperplasia of the epithelium with branching down-growths. There were many focal collections of leucocytes and miliary abscesses in all parts, and in these abscesses were found multinuclear giant cells and the blastomyces, which grows best on beer-wort, glucose and glycerin-agar, but readily upon all media. It develops first in spherical double-contoured bodies from 10 to 20 mm. in diameter the envelope

enclosing a granular protoplasm with and without nuclei. This obligate aërobe differs from the protozoa in developing by budding. Injected into various animals it sets up disease-foci containing the same organism.

Buschke has presented the following survey of the yeast mycosis in man and animals :—

"In the first group he places those members of the yeast family which have no special pathogenic tendency, and which may survive in the superficial layers of the epidermis as saprophytes, capable, however, of assuming a pathogenic *rôle* under certain favouring conditions such as those incidental to chemical changes.

"In the second group he places those forms capable of invading the upper layers of the epithelium, which multiply, and by inducing either catarrhal or erosive effects finally may lead to ulceration.

"A third group comprises the budding forms capable of invading and afterwards inducing morbid conditions in the viscera of man and animals. In this group Buschke finds two classes : (*a*,) Budding forms which independently or by means of blood invasion lead to a distinct blastomycetic septicæmia ; (*b*,) Budding forms which produce local changes in the tissues. This last is the agent effective in the production of most cases of blastomycetic dermatitis."

REFERENCES.—[1] "Brit. Journ. Derm.," July, 1898.

DERMATITIS HERPETIFORMIS, or HYDROA HERPETIFORME.

T. Colcott Fox, M.B.

In 1898 a discussion took place at the Dermatological Society of London[1] on this group of eruptions which, by almost general consent, it has been deemed desirable to distinguish, at any rate clinically, from erythema multiforme on the one hand and from herpes and pemphigus on the other.

Allan Jamieson, of Edinburgh, adopted the following definition : "A chronic neurosis of the skin, associated with some yet unexplained blood changes, not markedly interfering with the general health. This causes a more or less universal eruption, coupled with burning and itching sensations, and regularly recurring for an indefinite period after intervals of complete or comparative immunity. The type is erythemo-bullous, which, however, may undergo considerable modification." The type met with may be purely erythematous (or rarely urticarial), or papular, or vesicular (most commonly), or pustular, or bullous, and may remain pure in successive outbreaks; or, on the other hand, the eruption may be multiform and change its type from time to time.

The eruption is a neurosis in the sense that it evolves under the immediate influence of the nervous system, although it may be due to a toxin. It is associated with important blood changes, but the view of Leredde and Perrin that we can found a differential diagnostic test on the synchronous presence of eosinophile cells in the blood and serum of the vesications seems hardly tenable. Arsenic has a certain influence in checking and controlling the eruption, but is not really curative.

Radcliffe-Crocker held that though pathogenically related to pemphigus the group was distinguished by a complex of symptoms, not necessarily all present, viz., erythema in rings or papules, vesicles, bullæ, and pustules *with a strong tendency to grouping* (*herpetiformity*); itching, often marked but variable; a tendency to run a long course by successive crops of eruption, and also by recurrence after long intervals of freedom.

Colcott Fox insisted on the features pointed out by Tilbury Fox and Duhring, viz.: (1,) A superficially-seated inflammation; (2,) The tendency to multiformity of eruption in any attack, and the change of type in different attacks; (3,) The tendency to herpetiform grouping; (4,) The notable disorder of sensation; (5,) The chronic course with tendency to relapses and recurrences. He pointed out the wide field covered by the term *herpetiform*, which included the morphological picture seen in herpes zoster, herpes facialis, herpes iris, and vesicular tinea circinata.

J. J. Pringle maintained the view that these eruptions were clinical varieties or types of a large and somewhat inchoate group of bullous affections, and he thought all attempts to classify these affections definitely would prove futile and delusive until we were in possession of positive facts as to their etiology. Points brought out by other speakers were the exceptional occurrence of scarring, the occasional fatal termination either by exhaustion or intercurrent disease, and the variability in the degree of disordered sensation present. The eruption known as *Hydroa æstivale* (*vacciniforme*) is clearly excluded; *Impetigo herpetiformis* (*Hebra-Kaposi*) is separated with greater difficulty; herpes gestationis is included. Certain rare cases of relapsing or frequently recurrent *Erythema* (*Herpes*) *iris* are very difficult to separate, and the delimitation from pemphigus is acknowledged to be almost impossible.

This London discussion called forth an elaborate criticism from Brocq,[2] of Paris. He renews his conception of *Dermatites polymorphes douloureuses*, which he set forth in a monograph in 1888.

The four cardinal characters of this vast group are :—

(1,) Painful (douloureux) phenomena of variable intensity, but almost always strongly marked, often even out of proportion with the eruptive phenomena.

2,) Eruptions almost always of polymorphic aspect, or at least erythemato-vesicular, erythemato-bullous, sometimes urticarial, papular, sometimes herpetiform, more often grouped, but may be disseminated.

(3,) A marked tendency to evolve by successive outbreaks.

(4,) An habitual conservation of good general health (with certain exceptions).

This group includes almost all the ancient pemphigus vulgaris of classical authors, as well as the modern group of dermatitis herpetiformis. He admits there is still an affection worthy of the name of pemphigus. Herpetiformity, when it exists, is also a symptom of the utmost importance.

Leredde[3] considers the skin changes as due primarily to change in the blood elements with presence of eosinophiles ranging between 22 and 33 per cent. This may happen in various diseases, *e.g.*, syphilis and lepra, but in dermatitis herpetiformis (Duhring), in Hallopeau's pustular dermatitis and Neumann's pemphigus vegetans it is constant, and a cause of eosinophile cells in the skin lesions.

The little retention cysts (milia) which have been noted after burns, pemphigus, epidermolysis bullosa, etc., have been described in Dermatitis herpetiformis by Allgeyer.[4]

REFERENCES.—[1] "Brit. Journ. Derm.," 1898 ; [2] "Ann. de Derm. et de Syph," T. ix, No. 10 and 11, Oct., Nov., 1898 ; [3] "Monats. f. Pract. Derm.," vol. xxvii, p. 381, 1898 ; [4] "Arch. f. Derm. u. Syph.," vol. xlvii, p. 319, 1899.

DERMATITIS VENENATA. *T. Colcott Fox, M.B.*

A number of cases have been reported due to airol, metol (in a photographer), oleum Lauri, eugallol, carbolic acid (gangrene), etc., and the usual contributions appear concerning the well-known dermatitis set up by the primula obconica and rhus toxicodendron.

A very curious outbreak at Birmingham arose from the large quantities of chloride of zinc in overcoats. This substance is also added to some kinds of flannelette to render it less inflammable. When dissolved out by sweat, etc., the chloride of zinc sets up first an urticaria-like patch followed by creamy-white spots centred by a hair follicle. Pustulation succeeded, and, in many cases, necrosis, with cellulitis and lymphangitis.

REFERENCES.—"New York Med. Rec.," p. 654, Nov. 5, 1898 ; "Lancet," p. 1470, Dec. 3, 1898.

DERMATOSES MEDICAMENTOSA. *T. Colcott Fox, M.B.*

Papers are constantly appearing describing the eruptions following the ingestion of various drugs, and practitioners have at hand in the Sydenham Society's edition of Morrow's work on Drug Eruptions an easy source of reference to past records. *Antipyrine* eruptions have been especially selected for note in recent years, and attention has been called to the occurrence of localised patches of eruption which recur again and again on the same site and so become permanent. The diagnosis in these cases is sometimes very difficult if the secret habit of taking the drug be concealed. Professor Fournier describes three curious cases of hæmorrhagic eruption of the penis, which caused great alarm from the supposed imminence of gangrene.

Arsenical Dermatoses have also been critically reviewed by Meneau, Nielsen, Geyer and Mibelli. The melanodermia is well known, and the record grows of the remarkable keratosis (corns) of the palms, which Mr. Hutchinson and others have shown may finally develop into epithelioma. Hartzell describes a remarkable example of the latter condition.

Iodide of Potassium is credited by Neumann with having produced a rare form of eruption in the stomach as well as on the skin.

Boric Acid and Borax.—R. B. Wild, after quoting cases in which an eruption followed the use of boric acid for irrigations or injections, or as lotion or ointment, and, further, when administered internally, records some instances which came under his own observation. He also quotes some records of eruptions from the ingestion of borax. Grumpelt and Hall also mention cases.

Antipyrine Rashes.—Apolaut ("Arch. f. Derm. u. Syph.," Band xlvi, Heft 3, Dec., 1898); Kurtz ("Berl. Inaug.-Dissert.," July, 1898; "Derm. Zeits.," Feb. 1899; "Deut. med. Woch.," No. 3, 1899); Fournier ("Ann. de Derm. et de Syph.," Ix, No. 4, April, 1899); Mibelli ("Monatsh. f. Pract. Derm.," Bd. xxvi, No. 11, p. 533, 1898; and "Giorn. Ital. del. Mal. Ven. e. del. Pelle," 1897); Wechselmain ("Deut. med. Woch.," No. 21, p. 335, 1898).

Arsenic.—J. Meneau ("Ann. de Derm. et de Syph.," T. viii. No. 4, p. 345, April, 1897, with bibliography); L. Nielsen ("Monats. f. Pract. Derm.," Bd. xxiv, 1897); L. Geyer ("Arch. f. Derm. u. Syph.," 1898, with bibliography); Mibelli ("Le Cher. Arsen., Sper.,"; "Arch. di Biol," Anno. lii, 1898, fasc. 4, with bibliography); Hartzell ("Amer. Derm. Assoc.," 1899); Hutchinson ("Arch. of Surg.," vol. ix, July, 1898).

Iodide of Potassium.—Neumann ("Arch. f. Derm. u. Syph.," xlviii, Heft 3, p. 323, 1899); Kaposi ("Wien. med. Presse," No. 9, p. 338,

1899); Giovanni ("Arch. f. Derm. u. Syph.," Bd. xlv, June, 1898); Malherbe ("La Presse méd.," No. 41, p. 243, May, 1899).

Boric Acid.—Wild ("Lancet," Jan. 7, 1899); J. J. Evans ("Brit. Med. Journ.," Jan. 28, 1899); Grumpelt ("Brit. Med. Journ.," Jan. 7, 1899); A. Hall ("Lancet," Jan. 28, 1899).

DERMATOSES TOXICA. *T. Colcott Fox, M.B.*

In addition to the eruptions excited by the ingestion of drugs, various blood "poisons" are responsible for producing very similar eruptions. F. J. Payne[1] believes the *decomposing elements of food* (ptomaines) can so act, and also *sewer gas* and other forms of decomposed animal products. Leredde[2] has an article on toxic dermatoses in the wider sense, under which he includes: (1,) Medicinal eruptions, whether arising from ingestion or penetration by other channels; (2,) Eruptions from aliments: (3,) Eruptions in infective maladies, as diphtheria; (4,) Eruptions following the injection of tuberculin, non-microbial diastases, snake venom, antitoxin substances as diphtheria antitoxin, animal serums; (5,) Eruptions from the circulation of toxic products abnormally formed in the viscera (auto-intoxications). These "poisons" can give rise to purpura, urticaria, œdema, erythemata from the scarlatiniform to E.-nodosum, and vesicating (pemphigoid) forms.

Of these toxic eruptions the *Dermatoses albuminuricæ* have lately received increased attention at the hands of Samuel West,[3] Colcott Fox,[4] Merk,[5] and Lindley Scott.[6]

Merk describes four types: (1,) A chronic papular eczema; (2,) A persistent pruritus; (3,) A form of urticaria; (4,) An erythema, much like that described by Lindley Scott, Le Cronier Lancaster, Huet and others. In Scott's five cases the eruption was at first papular erythema, discrete but tending to coalesce and be surrounded by erythematous areas, and to generalise. After a week subsidence began, and marked desquamation followed. Here and there wheals, or hæmorrhages, or vesicles may appear. In Colcott Fox's case there was intense hæmorrhage into the erythema.

Buschke[7] has written on the *Exanthems of Gonorrhœa.*

Callari[8] has been trying the effects of **Large Injections of Artificial Serum** in psoriasis, eczema, pruritus, lichen, sarcoma, lupus, scrofuloderma, mycosis fungoides, carcinoma, burns, pemphigus, etc., on the supposition that many skin diseases are of toxic or antitoxic origin. Pruritus, psoriasis and eczema seemed to be benefited, but not other affections.

Da Costa[9] has an interesting article on *Anomalous Eruptions occurring in Typhoid Fever*, a subject to which we briefly referred in

last year's "Annual." In addition to the characteristic lenticular eruption (rose spots), one may meet with: (1,) A scarlatiniform rash preceding the lenticular rash, or later, even in convalescence; (2,) A morbilliform rash, which is rarer and reminds one of typhus, or of the rare cases where typhoid and measles co-exist; (3,) A mottling; (4,) Urticaria according to Griesinger.

REFERENCES.—[1] "Brit. Journ. Derm.," p. 299, 1898; [2] "La Presse méd.," Sept. 16, 1899; [3] "Clin. Soc.," Lond., 1899; [4] Idem.; [5] "Arch. f. Derm. u. Syph.," Bd. xliii; [6] "Brit. Journ. Derm.," 1899; [7] "Arch. f. Derm. u. Syph.," Bd. xlviii, 1899; [8] "Rif. Med.," Aug. 14-22, 1899, epitomised in "Brit. Med. Journ."; [9] "Amer. Journ. Med. Sci.," July, 1899.

DIABETES. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

Lépine,[1] for some reason, seeks to controvert the conclusions of Bertillon as to the great increase of diabetes in Paris, and he does so in a curiously indirect way, by utilising the statistics of the Hôtel Dieu at Lyons!

It may be true that there has been no increase of diabetes among hospital patients at Lyons, and yet also true that there has been an increase in Paris, for Bertillon lays stress on the fact that it is among the well-to-do, and not the hospital class, that the prevalence of diabetes has been so marked. The Registrar General's returns prove the great increase of diabetes in England and Wales, where the total number of deaths from this cause has more than doubled in the last twenty years. In an interesting article on diabetes, at the Massachusetts General Hospital, Fitz[2] has shown that as many cases had been admitted during the previous thirteen years as throughout the whole of the previous sixty-one years of the existence of the hospital.

It is generally recognised that the pancreatic atrophy which is often the cause of diabetes is itself usually caused by the toxins of infectious processes, so that there is nothing paradoxical in the assertion of Manchot[3] that he has observed two cases of pancreatic diabetes due to syphilis. The same observer points out that transient glycosuria occurs sometimes in the early stages of syphilis, and he claims that this phenomenon is due to a temporary affection of the pancreas and perhaps the liver.

Many diabetics are, or have been, very fat, and it is probable that there is a relation between the constitutional peculiarity which stores up carbohydrate as fat instead of destroying it, and that condition in which the power of converting carbohydrates is altogether lost. It has been observed by Achard and Weil[4] that many obese persons are rendered glycosuric by the subcutaneous injection of 10 grammes of

glucose a dose which in healthy persons produces no change in the urine.

When methylene blue is administered by the mouth it is normally excreted by the kidney, and colours the urine a deep blue, but in certain circumstances this substance is not excreted, and some interest attaches to the permeability or non-permeability of the kidney. It is contended by some that non-permeability indicates contracting granular kidney in an advanced stage. The subject is one which deserves more attention than it has received, for such an aid to prognosis, if trustworthy, would be valuable. According to Bard and Bennett the permeability of the kidney is not altered in the parenchymatous forms of renal disease. Achard and Weil[5] have met with a case of slight diabetes in which cerebral hæmorrhage occurred, the urine became albuminous, the sugar diminished notably, and the kidneys became impermeable to methylene blue, while the sugar in the blood rose to 5 parts per 1000. They consider that the kidneys became impermeable not only to methylene blue but to sugar, with resulting hyperglycæmia. Nesti,[6] as the result of a considerable personal experience, noted that the permeability of the kidney to methylene blue has no significance whatever, as people may die of uræmia, or the kidneys be almost completely converted into a mass of connective tissue, without any striking change in the amount of pigment excreted.

A great deal of discussion has taken place upon the question whether a diabetic retains the power of assimilating carbohydrates? But this is too crude a form in which to put the problem. The substances included under the term "carbohydrates" vary greatly in assimilability, and there are great differences in the capacities of diabetic patients in this respect. Speaking generally, we may lay down the rule that the younger the patient the less capacity will be found to exist for the assimilation of carbohydrates, but it is easy to determine the extent to which it exists in each individual case, and it is the duty of the physician to do this.

No doubt many patients have been sacrificed to too stringent notions of diet, and more would have suffered if it had not been very difficult to enforce a really strict dietary over a long period of time.

Dietary for Diabetics.

A

Breakfast.—Fat bacon, 2 oz.; eggs, 2; tea or coffee, ½ pint; cream, 1 oz.; Callard's or protene bread, 3 ozs.; butter, 1 oz.

Luncheon.—Cooked meat, 3 ozs.; green vegetables, 3 ozs.: cheese,

2 ozs.; Callard's or protene bread, 2 ozs.; butter, 1 oz.; claret. 4 ozs.; or whiskey, 1 oz.

Tea.—Tea, ½ pint; cream, 1 oz.; Callard's or protene cakes, 1 oz.

Dinner.—Meat soup or beef tea, ½ pint; cooked meat, 3 ozs.; green vegetables, 3 ozs.; cheese, 1 oz.; butter, 1 oz.; Callard's or protene bread, 2 oz.; claret, 6 oz.; or whisky, 1 oz.; coffee, 4 oz.

B

Breakfast.—Fat bacon, 2 oz.; eggs, 2; tea or coffee, ½ pint; milk, ¼ pint; Callard's or protene bread, 3 ozs.; butter, 1 oz.

Luncheon.—Cooked meat, 3 ozs.; green vegetables, 3 ozs.; potatoes, 3 ozs.; cheese, 2 ozs.; Callard's or protene bread, 2 ozs.; butter, 1 oz.; claret, 4 oz.; or whiskey, 1 oz.

Tea.—Tea, ½ pint; milk, ¼ pint; Callard's or protene cakes, 2 oz.

Dinner.—Meat soup, ½ pint; cooked meat, 3 ozs.; green vegetables, 3 ozs.; potato, 3 ozs.; custard or souffle; Callard's or protene bread, 1 oz.; claret, 6 ozs.; or whiskey, 1 oz.; coffee, 4 ozs.

C

Breakfast.—Fat bacon, 2 ozs.; salad or cheese, 1 oz; toast, 2 ozs.; tea or coffee, ½ pint; milk, ½ pint; butter, 1 oz.

Luncheon.—Fish, 2 ozs.; salad or green vegetables, 4 ozs.; butter, ½ oz.; cheese, 2 ozs.; toast, 1 oz.; fruit, 2 ozs.; bitter beer, ½ pint; or claret, 4 oz.; or whiskey, 1 oz.; mineral water.

Tea.—Tea, ½ pint; cream, 1 oz.; Callard's cakes, 2 ozs.

Dinner.—Meat soup, ½ pint; cooked meat, 4 ozs.; potato, 3 ozs.; green vegetables, 3 ozs.; custard, 4 ozs.; mushroom, 2 ozs.; toast, 1 oz.; cheese, 1 oz.; butter, ½ oz.; fruit, 2 ozs.; claret, 6 ozs.; or whiskey, 1 oz.; mineral water; coffee, 4 ozs.

Note.—Part of the butter may be eaten with the vegetables. The cheese may be cooked with butter, or grated into soup or upon the vegetables. The eggs, instead of being eaten at breakfast, may be utilised for custard, soufflé, etc., or taken in soup. The milk may be partly used in custard, etc.

No sugar should be used in the preparation of any of these articles. Saccharin may be employed as a substitute for sugar.

Messrs. Callard's address is 65, Regent Street, London, W.

The Protene Food Company is at 37, Welbeck Street, Cavendish Square, London, W.

Bottled fruit for diabetics can be obtained from E. Blatchley, 167, Oxford Street, London, W.

Poole's "Cookery for the Diabetic," Longmans, price 2/6, is a useful help.

Patients should, on first coming under treatment, be placed upon *A diet*, or strict diet. At the end of one or two weeks, if the case is proceeding favourably, and when the average daily quantity of sugar excreted under this dietary has been properly ascertained, the patient may pass on to *B diet*, upon which he should remain several weeks, and if under forty years of age, he will probably not be able to proceed further. Patients over forty who have been some weeks on *B diet*, and whose average daily excretion of sugar upon that diet has been ascertained, may try *C diet*. The effects of these changes must be watched, and their influence estimated by the body weight, the quantity of urine, and the quantity of sugar. Should the addition of carbohydrates cause a return of polyuria and thirst they must be stopped at once.

The various articles of food, including biscuits and bread, prepared by the Protene Food Company, for the use of diabetics, contain only minimal quantities of carbohydrate, and compare in this respect favourably with many other preparations in the market. Their nutritive value and digestibility are probably not great, but these are points in which almond cakes or gluten bread have not shone conspicuously. The question of palatability remains, and must be decided by each patient for himself. An analysis of Protene Bread made for the writer by Mr. F. H. Alcock, F.C.S., F.I.C., is appended:

Analysis of Protene Bread.

Moisture (212° F.)	10·0	per cent.
Mineral Salts	6·3	,,
Nitrogenous Matter	62·2	,,
Fats	18·8	,,
Carbohydrates	2·7	,,
	100·0	

It has been frequently observed that healthy persons develop glycosuria when taking **Thyroid Gland,** and Edgeworth[7] administered 10 grains daily of dry thyroid to a diabetic patient, with the result that the excretion of sugar was doubled; but Murrell[8] has recorded a case of diabetes passing a daily average of sugar amounting to 5848 grains, in whom 12 grains of fresh thyroid, given in pills three times a day, reduced the sugar to 1180 grains, while the urine fell from 112 oz. to 85 oz. The diet was unrestricted during this experiment. The patient lost weight, however, falling from 6 st. 9 lbs. to 4 st. 13 lbs. In spite of this she is said to have undergone a marked change for the better. She notably improved in strength, the thirst was less, and her mouth was not so dry. The patient was a woman aged twenty-eight,

the subject of acute diabetes. The observation is curious and paradoxical, but the history of diabetes abounds in instances of a similar kind, where a reduction of the amount of sugar has occurred under particular remedies. The loss of weight proves that the treatment was doing harm and not good, for beyond everything else, the object to be kept in view in the management of a case of diabetes is to secure and maintain equilibrium in the processes of assimilation and tissue waste, as shown by the body-weight. If the patient is losing weight, the plan of treatment must be wrong and needs reconsideration, whatever effect it may have upon the excretion of sugar.

Murrell suggests that thyroid may be found of most use in cases of diabetes associated with obesity, and this suggestion is *primâ facie* plausible, but the remedy has not proved to be so useful in these cases as might be expected.

Among the remedies which have been followed by the cure of this disease is **Boracic Acid.** Norway[9] claims to have cured a boy of eighteen, and Monckton[10] had an equally successful result with his own son, aged twelve. The former case was dieted upon skim milk, but in the latter the diet is not described. Norway's prescription is :—

℞ Acidi Borici	gr. xx	Liq. Arsenici Hydrochlor.	♏v
Glycerini	ʒj	Liq. Strychninæ Hydrochlor.	♏x
		Aquæ	ad ʒj

REFERENCES.—[1] "Brit. Med. Journ.," vol. ii, p. 997, 1898; [2] "Amer. Med. and Surg. Bull.," Sept. 25, 1898; [3] "Monatsh. f. prakt. Dermat.," xxvii; [4] "Sem. méd.," p. 78, 1898; [5] Ibid., p. 40, 1898; [6] "Annal. des malad. des org. genito-urin.," Jan., 1899; [7] "Brit. Med. Journ.," vol. ii, p. 514, 1898; [8] "Med. Press and Circ.," Dec. 14, 1898; [9] "Brit. Med. Journ.," vol. ii, p. 1812, 1898; [10] Ibid.

DIABETES INSIPIDUS. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

In last year's "Annual" may be found Brachmann's observation that a case of diabetes insipidus derived benefit from 50-grain doses of **Amylene Hydrate,** given as a hypnotic, the quantity of urine falling from 250 ozs. to 100 oz. in twenty-four hours. This result has been confirmed by Clowes,[1] the dose in his case beginning at 30 grains and rising to 180 grains at bedtime, the quantity of urine falling from 200 ozs. to 100 ozs. **Paraldehyde** was subsequently tried with similar results, but the dose used is not recorded.

Several observers, notably Dujardin-Beaumetz, have from time to time obtained good results from **Antipyrine** administered in doses of 5 to 15 grains three times a day. Cipriani[2] has recently recorded a case of polyuria to the extent of 12 litres (360 oz.) a day caused by fright, which was reduced to 2½ litres (75 oz.) by the administration of

45 grains of antipyrine daily. Cessation of the drug, or the substitution for it of an indifferent substance, was followed by increased diuresis.

In a case of extreme polyuria Ewart[3] has given inhalations of carbonic acid gas with benefit; thirst was diminished, the distressing dryness of the lips, tongue, and mucous membrane disappeared, and the amount of urine co-incidently began to fall.

REFERENCES.—[1] "Brit. Med. Journ.," vol. ii, p. 129, 1898; [2] "Clinica Moderna," June 29, 1899; [3] "Practitioner," Jan. 1899.

DIABETIC COMA. *F. A. Burrall, M.D., New York.*

Acetone ($C_3 K_6 H_6 O$, or $CH_3 CO, CH_3$) was for a time regarded as the cause of diabetic coma. Kussmaul gave the disease its name, and he and other investigators have worked diligently to discover its pathology. At present this remains a matter of much uncertainty.

With regard to acetone, it is shown that a large quantity may be present in the blood for some time and coma be absent. Also it is found in other diseases. Besides, healthy men have taken large doses without injurious effects. At the same time it has also been demonstrated that doses of 5 or 10 minims injected into rabbits at short intervals, made the animals drowsy and comatose, while single larger doses produced no such effects. With acetone have been found aceto-acetic and oxybutyric acids in diabetic blood, so that this group is now watched with much interest.

If we follow the lead indicated by certain experiments, we may form conclusions sufficiently clear to aid in further investigations and serve as a basis for practice. Thus, Vaughan Harley injected grape sugar into the jugular vein of dogs, and produced symptoms resembling diabetic coma, when the ureters were ligated so as to prevent elimination of the sugar or its products by the kidneys. He believes that the coma is caused in part by substances produced by the decomposition of sugar, but is principally due to the production of acids, which are formed by the splitting up of the sugar molecule, and which diminish the alkalinity of the blood. Further, Sladelman and Minkowski have demonstrated that an acid auto-intoxication gives rise to comatose symptoms.

Limited space forbids the recital of the many experimenters in this field; but the researches point to the conclusion that a toxic substance and a diminished alkalinity of the blood, caused by the formation of certain acids, are concerned in the production of diabetic coma, and, as R. T. Williamson expresses it, "Whatever the exact poison may be, as a rule, acetone, aceto-acetic acid, and β-oxybutyric acid are found in the urine coincident with this intoxication."

These theoretical views have led to practical experiments Rogue, Devic, and Hugouneng found that diabetic blood had about half the alkalinity of normal blood, and that 8 c.c. of the serum of this blood was sufficient to kill rabbits. On reducing this acidity by a dilute solution of sodium bicarbonate to the normal blood standard, 23 c.c. were required to cause fatal effects. Hence, it is recommended that the urine of the diabetic patient should be frequently examined, and, if found unduly acid, or if the patient shows symptoms of intoxication, alkalies should be given by mouth or rectum. For hypodermic use, from 3 to 5 per cent. of sodium bicarbonate in 0·6 or 0·7 per cent. solution of sodium chloride is also advised. To avoid certain objections to the above method, a writer recommends a tablet made up of chinic acid (chinasaure) *sic*, urosin, and citrate of lithium, which is said to render the urine alkaline.

REFERENCES.—[1] "Diabetes Mellitus and Its Treatment," by F. Williamson, M.D., Lond. ; [2] "Handbuch. der speielle Therapeutiker innerlichen Krankheiten," Jena, 1895 ; [3] "Berlin. klin. Woch.," April 3, 1899, p. 205, et seq. ; [4] "Journ. Amer. Med. Assoc.," June 17, 1899.

DIARRHŒA AND INDIGESTION OF INFANTS.

Henry Dwight Chapin, M.D., New York.

Dr. Golinger[1] advises the treatment of dyspepsia in children by **Papain.** This remedy possesses antiseptic and digestive powers while also non-irritative and harmless. It is derived from the tropical plant *Carica papaya*, indigenous in Brazil. It is a yellowish-white powder, of spicy odour and taste akin to meat extract. Its properties are, that it dissolves albumin and fibrin, and has the advantage over pepsin of activity in neutral and alkaline liquids as well as in acid. Thus, it has peptonising power in the intestine. The author has used it largely in intestinal catarrh in infants and young children with good results. As a rule he ordered 0·1 grm. (1½ grains) three times daily for nursing infants, each dose followed fifteen minutes later with oatmeal gruel or diluted cow's milk. For children over one year old it is advisable to make the dose 0·2 to 0·3 grm. (3 to 4 grains).

Dr. G. Joachim[2] gives the following experience with **Tannopine :—**

(1,) It is completely innocuous and can be administered without risk to the smallest infants in doses of 5 to 7 grains four times daily, and to older children and adults in doses of 7 to 15 grains several times daily, because decomposition into its two constituents evidently takes place very slowly in the intestinal canal.

(2,) It is an efficient medicament in all forms of enteritis, its value being doubtful only in the tuberculous form.

(3,) It is advisable to continue the use of the drug in small doses

for a few days after the bowels appear to have regained their normal function.

Dr. Elezarian[3] has treated cases of infantile diarrhœa with **Eudoxine.** This contains 52·9 per cent. of iodine and 14·5 per cent. of bismuth. It is a reddish-brown powder, odourless and tasteless, employed chiefly as a gastric and intestinal disinfectant. As much as a grain every hour to a child a year old has been given without any alarming results. The proper and effective dose will be understood and appreciated only after careful study of each individual idiosyncrasy and the disease.

Dr. C. G. Kerley[4] discusses the management of acute gastro-intestinal infection in infants. With the onset of the attack 1 grain of **Calomel** is ordered to be given in divided doses of $\frac{1}{6}$ of a grain every thirty minutes. If vomiting is troublesome it will be advisable to give from $\frac{1}{30}$ to $\frac{1}{40}$ of a grain every fifteen minutes until the desired amount has been given. The diet consists of barley-water, the barley being cooked three hours; wine whey ($\frac{1}{2}$ an ounce of sherry wine to 10 ounces of whey); liquid peptonoids, 1 drachm every three hours; weak albumin water (white of egg to a pint of boiled water); beef juice, diluted, 1 part to 24 of boiled water. The following prescription, or some modification of it, is ordered :—

℞	Bismuth Subnitrate (Squibb) grs. xij to xx	Water enough to make	℥j
	Bismuth Salicylate gr. j	Aromatic Tincture of Rhubarb	♏j to ij

This is given hourly (12 to 20 grains of bismuth to a child one year old).

Irrigation of the colon is practised in every case that promises to be severe. A solution of 1 per cent. boric acid or normal salt solution is ordinarily employed. If the amount of mucus in the stools is large, or if there is blood in any degree, 1 per cent. tannic acid solution is used instead.

Dr. Henry D. Chapin[5] discusses the treatment of summer diarrhœa in infants. He shows by statistics that July gives much the highest death-rate, and the average mean temperature of this month is from one to four degrees higher than August. When the baby feels the greatest depression from the heat the deleterious changes in the cow's milk are most marked; hence, bottle babies are by far the greatest sufferers. Not only does the lactic acid fermentation begin, but various colonies of bacteria are multiplied, such as the saprophytes or those of the proteus group. Infants under two years are the greatest sufferers. In hot days little children are put into a tub and allowed to play in tepid water for several hours. A bottle baby should have less bulk of food and a high dilution of milk in very hot weather. In

summer diarrhœa all forms of milk must be temporarily withheld. Among substitutes for milk may be mentioned egg-water, thin gruels made from barley or wheat-flour and cold whey. When cereals are used the starch is to be dextrinised by one of the preparations of diastase, such as "Cereo," Forbes' diastase, etc. The drug to be used is **Subnitrate of Bismuth** in large doses. The author considers that the subcarbonate, salicylate and beta-naphthol bismuth have no decided advantages over the subnitrate. Opium is contra-indicated until the bowel has been thoroughly emptied of irritating contents, when the stools are scanty and foul-smelling, and when cerebral symptoms threaten. In cases, however, in which rapid peristalsis and profuse glandular secretion persist, a few moderate doses of **Opium** are most valuable and may aid in saving life.

Dr. J. L. Morse[6] considers the renal complications of the acute enteric diseases of infancy. The urine was examined of seventy out-patient infants ill with uncomplicated diarrhœal diseases. No attempt was made to select any special line of cases as to type, severity or duration, but rather to examine as great a variety as possible. The clinical diagnosis was fermental diarrhœa in sixty-four, and ilio-colitis in six.

The following conclusions seem justified as regards the renal complications of the acute diarrhœas of infancy, aside from cholera infantum. It is probable that more or less marked degenerative changes occur in the kidneys in many, if not most, cases. These degenerative changes are due to the action of bacteria or of toxins, almost always to the latter. Inflammatory changes are rare. As the result of the degenerative changes in the kidneys, albumin and renal elements may be found in the urine. Albuminuria occurs in about 15 per cent. of all cases. The sediment contains casts, usually hyaline and fine granular, in about 60 per cent. of the cases in which albuminuria is present. The presence of albumin and casts does not justify the term "nephritis." Nephritis is a very unusual complication of the acute diarrhœal diseases of infancy. The occurrence of albumin and renal elements in the urine is not dependent upon any other symptom or combination of symptoms. It is not of bad prognostic import. Concentration of the urine is common. It varies with the temperature rather than with other symptoms. It is probable that more marked pathological changes, possibly somewhat different in their nature, occur in cholera infantum, and that the resultant changes in the urine are also more marked. It does not seem probable, however, that their prognostic importance is much greater.

REFERENCES.—[1] "Kinder-Arzt," vol. vi, No. 1, 1898; [2] "Allg. med. Centr.-Zeit.," No. 65, 1898; [3] "New York Med. Journ.," Aug. 20, 1898; [4] Ibid., vol. lxviii, No. 4, 1898; [5] "Med. News," July 15, 1899; [6] "Arch. Ped.," vol. xvi, No. 9, 1899.

DIARRHŒA (Summer, in Australia).

G. Lane Mullins, M.A., M.D., Sydney.

A discussion on this subject took place in Melbourne, Vic., in April, 1899. It was asserted that the more common exciting causes were polluted water supply, sausages, tinned meats and fish, etc., in adults, and impure milk in infants. It should be regarded as a bacterial disease.

TREATMENT.—Change of air, rest, lavage of the stomach, irrigation of the intestine with boiled water or antiseptic solution; in many cases a wet-nurse should be procured for infants. Castor oil (early), small doses of calomel, emetics, strychnine, alcohol, minute doses of morphine, bismuth and chalk, salol, opium (cautiously), quinine, tannogen. The diet should consist of boiled water, ice, egg-albumen water, scraped meat, raw beef juice, rice or barley water, brandy (if patient is weak). Some advocate, others deprecate, the exhibition of astringents.

REFERENCE.—"Aust. Med. Gaz.," May 20, 1899.

DIGESTION (Disorders of). (See under "Stomach.")

DIPHTHERIA. *R. M. Fenn, M.B., C.M.*

BACTERIOLOGY.—Cobbett[1] recommends alkalised serum as a culture medium for the bacterial diagnosis of diphtheria. This medium, first described in 1894, has been found very useful in the pathological laboratory at Cambridge; it has the advantage of remaining transparent when sterilised at a high temperature.

Hewlett[2] recommends a modification of Neisser's stain, viz., five seconds in the blue and ten in the brown stain. The method is not reliable for examining swabbings from the throat, and only with care to avoid fallacies from leptothrix and diplococci, is it of use in examining fresh membrane.

The question[3] whether the so-called pseudo-bacillus is a distinct germ or an attenuated form of Loeffler's bacillus is still *sub judice*.

Walsh[4] distinguishes the three following forms of diphtheria in the order of increasing severity: "Staphylo-angina;" "Strepto-angina;" and "angina Klebs-Loeffler." The name of each form indicates the germ that causes it.

Of one hundred and seventy-eight cases of diphtheria admitted to the University College Hospital[5] diagnosed on clinical grounds, the

bacillus was found in pure growth or mixed with cocci in one hundred and forty-nine. A few of the cases where the bacillus was not found were undoubtedly diphtheria; in fact in two of them paralysis developed.

The persistence of the Loeffler bacillus in apparently healthy throats is commented on by Kassowitz,[6] who quotes figures from different authors showing that the bacillus was present in 25 per cent. in non-diphtheritic children at a certain hospital; in 40 per cent of the children attending a children's dispensary, and in 19·2 per cent. of men in certain soldiers' barracks. Macgregor[7] records a case where the bacilli were present in virulent form for nearly six months after the attack. In those who are exposed to infection (including nurses) the Loeffler bacillus is frequently found in the throat.[3]

DIAGNOSIS.—Of the cases of supposed diphtheria sent into the Glasgow Fever Hospital, according to a recent report by Johnston,[8] 25·7 per cent. were not cases of that disease. Evidently there is still considerable difficulty in diagnosing the disease, and this difficulty is not entirely removed by bacteriological examination.

INFECTION.—Dixey,[9] in a careful study of the seasonal prevalence of diphtheria in London, concludes that: "The interruption of the usual course of mortality from that disease with the two chief holiday periods is again apparent in both 1896 and 1897. The new evidence, like the old, tends to show that school infection is an important though not the sole factor in the spread of diphtheria."

TREATMENT.—The chief interest evinced in the subject of diphtheria has centred round the action of antitoxin.

Sims Woodhead,[5] of the Institute of Preventive Medicine, prepares a more concentrated serum than that usually used. It has 4000 units in 5 c.cm.

Dose of Antitoxin.—In 1895, probably insufficient doses (1000 normal units or less) were generally given, and the supply was of unreliable strength.[10] In 1896 and 1897, in the University College Hospital,[5] the average dose was much greater, viz., 7,200 and 7,800 respectively; and now it is the practice to give each patient on admission a dose of not less than 6,000 normal units. The increase of dose, according to Martin and Hunt, has caused a decrease in mortality.

Rosenthal[11] begins with 1,000 or 2,000 immunising units, gives 2,000 to 3,000 units at the second dose, and gradually increases the quantity in this way.

The Local Action of Antitoxin as an Antidote.—Douglas[9] carried out three series of experiments: (1,) With toxin alone; (2,) With

toxin and a half neutralising dose of antitoxin (as regards its lethal activity); and (3,) With toxin and a fully neutralising dose. The full test dose of toxin was given in each case, and the animals (guinea-pigs) were killed at varying periods after injection, and sections of the abdominal wall (where the injection was made) were stained and examined. The cellular changes in all cases were found to be degenerative, and there was no indication of proliferation of affected cells. The general result of the investigation was that antitoxin, whatever may be its antagonistic effect generally, does not act locally as a chemical antidote to the toxin.

Antitoxin and Immunity.—Morril[12] arrives at the following conclusions on this debated point: (1,) Immunity in any given case may be conferred for at least ten days by the injection of a small dose (100 to 250 units), provided it is given twenty-four hours previous to actual infection; (2,) A larger dose (250 units for a child of two years, up to 500 for one of eight or over), will confer safety for twenty days; (3,) If pure serum is used no harm will follow its use in the vast majority of cases; (4,) It is the duty of the physician to immunise the members of a family or close community where diphtheria breaks out. Donald,[13] convinced of the value of antitoxin as an immunising agent, gives it in doses of 250 to 500 units.

Efficacy of the Antitoxin Treatment.—The general opinion of the profession, as expressed in print, in overwhelmingly in favour of the efficacy of this mode of treatment. Kassowitz,[14] however, strongly opposed by Paltauf,[10] has emphatically declared against the use of antitoxin. In this he is partly supported by Lennox Browne.[15] Kassowitz affirms that it does not reduce mortality, increases the incidence of nephritis and post-diphtheritic paralysis, does not affect the temperature, and does not improve the chances of the patient after tracheotomy. This author quotes statistics in favour of his contention, and strikes at the root of the whole subject by denying that the causal relation between Klebs-Loeffler bacilli to diphtheria has been proved.

In London[19] the number of deaths per cent. of notified cases has diminished in the years 1895 to 1897, the figures being 20·6, 19·7, and 17·7 respectively. These figures, compared with those of 1893 and 1894 (23 and 23·9 respectively), show a decrease for which there is no explanation other than the use of antitoxin.

Martin and Hunt[5] furnish a useful series of statistics showing the value of this remedy in the University College Hospital. The figures are the more valuable as the cases admitted were rather above the average in severity, and were diagnosed, in the first place, on clinical evidence alone.

The Effect on Mortality.—The death-rate both of the laryngeal and other cases has been greatly reduced, and the total mortality of all cases has fallen from between 33 and 43 per cent. to 28, 17·7, or 17 per cent. This reduction is proved not to be due to a more favourable age of the patients admitted in the last three years; it is not explained either by a diminished proportion of laryngeal cases; nor does an earlier commencement of treatment account for it. It could only be accounted for by a new factor in treatment, and the only new factor is the use of antitoxin.

Other statistics of the same hospital's practice show that a marked lowering of the death-rate is only seen when the treatment is begun within the first four days. In the pre-antitoxin days only 48 per cent. of the cases attained a normal temperature before the fourth day. In the antitoxin cases, however, 83 per cent. reached a normal temperature at that period.

Diphtheria statistics from the Institute for Infectious Diseases in Berlin,[17] also tell very favourably for this treatment, the mortality in the last four years being less than one half of what it was in the same time before the introduction of serum treatment. In Berlin the mortality per cent. has been reduced to about one-third of the previous rate. Other German towns, and Vienna and Paris[18] produce similar evidence. Bernheim[19] is satisfied that the serum injections have reduced the mortality one-half, but says this treatment is more effectual when applied early. Waxham[20] reports twenty-nine consecutive intubations for diphtheria, with twenty-seven recoveries—all the cases being treated with antitoxin. Three were under two years of age, with two recoveries; eight were two years old, and all recovered; six were three years old, and all recovered; six were five years old, with five recoveries; two were five and four were six years old, and all recovered. The time[21] necessary to retain the tube in intubation is reduced from six to seven days to three to five days.

With regard to the influence of the *serum treatment* on the occurrence of *Post-diphtheritic paralysis*, it is generally acknowledged that the tendency to paralysis is not diminished. Woodhead[9] is satisfied that antitoxin has no power to produce paralysis and should be used before degenerative changes are set up, and that enough antitoxin should be given to neutralise not only the lethal but also the paralysis-producing action of the diphtheria toxin. Sevestre[22] believes that there is an increase in the incidence of paralysis, accounted for by the increased number of recoveries from severe attacks of the disease.

Albuminuria is not prevented by antitoxin;[4] at any rate if not administered within the first six hours.

Duration and Extension of the Membrane.—"The duration of visible membrane[5] is much shorter in antitoxin cases, and it is extremely rare to observe any spread of the membrane, either locally in the throat or to previously unaffected parts, such as the nose and larynx within twenty-four hours from the time of injecting the serum."

Undesirable Effects of Antitoxin.—Erythematous eruptions[22] and urticaria rarely appear on the first day, generally on the third or fourth day, but sometimes on the eighth or tenth day. They are due to the serum apart from its diphtheritic properties.[24] Amongst other conditions due to the use of antitoxin enumerated by Sevestre may be mentioned adenitis of the groin, axilla and neck, mucous diarrhœa with excitation —even violent delirium. Morse [25] records a case in which seven days after an injection of 500 units with all antiseptic precautions, urticaria and glandular swelling with chilliness, vertigo, and fainting, and enormous swelling of the feet developed. There was almost complete suppression of urine, the small amount passed was thick and contained no albumin.

Contra-indications.[22]—If the disease of the throat is mild and the patient suffers from pulmonary phthisis, it is better not to use the serum, as it acts prejudicially on the lungs.

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DIPHTHERITIC PARALYSIS.

Græme M. Hammond, M.D., New York.

Plicque,[1] after calling attention to the absolute dietetic needs of the patient, and the fact that though food is always required it is sometimes difficult for the patient to swallow it, recommends that it should be given in small quantities, frequently, and in such a form as to be readily digested and assimilated, and that in pressing cases gavage should be resorted to. When vomiting is a complication after each

meal, then small quantities of champagne or shaved ice should be given. Sometimes the disorder of the stomach depends upon partial paralysis of the bowel, with consequent constipation. In other instances in which the stomach alone is at fault, alimentation by the rectum, the subcutaneous injection of artificial serum, and similar supporting measures must be adopted.

Sometimes the application of the positive pole of the galvanic current to the nape of the neck, the negative pole being placed over the stomach, and 8 to 10 milliampères used, will be of value in stopping the vomiting.

Among the tonics recommended are **Kola, Cocoa,** the **Glycerophosphates, Phosphide of Arsenic,** and **Strychnia.** Phosphide of arsenic he thinks is useful in gastro-intestinal cases, and the strychnia particularly so where there is muscular failure. Salt baths, stimulating irrigations, and massage, are also advantageous.

REFERENCE.—[1] "Therap. Gaz.," Dec. 1898.

DYSENTERY.

James Cantlie, F.R.C.S.

TREATMENT.—Since ipecacuanha was introduced in the treatment of dysentery by Dr. Scott-Docker, in 1848, many substitutes have been tried, and a few with success. Amongst these, **The Saline Treatment** by sulphate of magnesium has many advocates. Dr. Wyatt Smith,[1] after a careful trial of ipecacuanha in British hospitals, at Buenos Ayres and Monte Video, during an epidemic of acute dysentery amongst sailors, found it so inefficacious that he was compelled to attempt other means of treatment. Opium gave no better results, and "in despair" he gave the "white mixture" of the Hospitals (magnesium sulphate with sulphuric acid) at frequent intervals. The treatment, according to this observer, acted like magic.

Capt. Buchanan,[2] I.M.S., also advocates the saline treatment for dysentery. He recommends 1 or 2 drachm doses of a saturated solution every one or two hours. If circumstances are against the regular administration of the mixture, Capt. Buchanan uses 1 ounce of a saturated solution twice a day, or ½ an ounce four times daily.

The *rationale* of the administration of salines is considered to be simply the removal of the causes and products of the inflammatory changes in the intestine, by the rapid washing out of the intestinal contents. The drug should be continued for one or two days after the blood and mucus have entirely disappeared.

Surgeon V. G. Thorpe,[3] R.N., whilst serving in China, testifies to the efficacy of drachm doses of a saturated solution of Epsom salts combined with 10 minims of dilute sulphuric acid, given every hour.

In the same number of the Journal, T. R. Wiglesworth, M.R.C.S., etc., states that he employed a similar saline treatment in Nicaragua, with pronounced success.

Dr. D. M. Ross[4] found that ipecacuanha was disappointing in the treatment of the dysentery of negroes in Jamaica, but that the saline treatment by Epsom salts and dilute sulphuric acid, was eminently successful.

Chloride of Ammonium is a drug strongly recommended by Surg.-Genl. Stewart[5] in the treatment of dysentery dependent upon, or associated with, hepatic derangements.

Opium, as a means of arresting dysentery, is condemned by all observers.

Large Enemata, in the treatment of acute dysentery, is recommended by Dr. F. M. Sandwith, of Cairo. The *rationale* of the treatment is that dysentery is at its onset local, and therefore should be attacked by local remedies. The enema employed by Sandwith is composed of :—

℞ Copper Sulphate	grs. xv	Starch	℥j
Tinct. of Opium	♏xv	Water	½ pint

The enema is administered daily for three days, and may be supplemented by 2 pints of a boracic acid and starch enema, given daily. By mouth, 15 grains of bismuth salicylate may be given coincidently with the enemata every four hours.

In regard to this treatment, many are inclined to hesitate in adopting it, owing to the danger of rupturing the gut by large enemata.

In the treatment of *Chronic Dysentery*, Dr. A. P. Hillier[6] recommends **Castor Oil** (1 to 2 drachms, with 4 to 10 minims tincture opii) thrice daily. Dr. Jameson (Kimberley) speaks well of large enemata of **Warm Milk,** slowly injected into the bowel by a long tube, in both acute and chronic dysentery.

The Amœba Dysenteriæ in Hepatic Abscess.—Capt. D. G. Marshall,[7] I.M.S., gives an excellent account of the position of the amœba dysenteriæ in the walls, etc., of liver abscesses, and of the means of staining and recognising the parasite. The particular abscess described by Capt. Marshall is evidently of the variety termed suprahepatic by Mr. Cantlie, as at the *post mortem* examination "the liver appeared to be normal, and the abscess was situated at the upper part of the right lobe." The writer also draws attention to the fact, which has been recorded by Manson, Cantlie, and others, that the pus first drawn off from a liver abscess never exhibits amœbæ, but that the organism is met with only after the discharge has lasted for three or four days.

REFERENCES.—[1] "Brit. Med. Journ.," Jan. 29, 1898; [2] "Ind. Med. Gaz.," Dec., 1898; [3] "Brit. Med. Journ.," Feb. 22, 1898; [4] Ibid., May 13, 1899; [5] Ibid., Sept. 24, 1898; [6] Ibid., Sept. 24, 1898; [7] Ibid., Jan. 10, 1899.

DYSMENORRHŒA. (See "Menstruation.")

DYSPEPSIA AND FUNCTIONAL DISORDERS OF STOMACH. (See "Stomach.")

EAR (Diseases of). *J. Dundas Grant, M.A., M.D., F.R.C.S.*

External Meatus—Removal of Cerumen.—Ricci[1] recommends that before attempting to syringe out a hard mass of cerumen, it should be disintegrated by means of **Hydrogen Peroxide,** which takes but a few minutes to act completely. This method is also favoured by Waggett.[2]

Eczema.—Exch[3] recommends an ointment of 10 grs. of pure carbolic acid to 4 ounces of zinc oxide ointment, first for cleansing and then as an application.

Somers,[4] while admitting that traumatism plays some share in the causation of *subacute diffuse external otitis*, considers that the rheumatic and lithæmic diatheses account for about 60 per cent. of the cases. In one case, which he watched from beginning to end, the inflammation extended to the membrane and caused a perforation. The disease is to be distinguished from eczema and seborrhœa. Treatment should largely be general, according to the dyscrasia responsible. The local treatment consists in cleansing the canal with pledgets of cotton-wool moistened with perchloride of mercury, and then applying an ointment of 1 grain of yellow oxide of mercury to a drachm of lanolin.

Hæmorrhage from the Ears after a fall may be due to a previously existing inflammatory lesion as well as to fracture of the external auditory canal, rupture of the tympanum, or fracture of the base (Tillaux[5].)

Exostosis.—Lake[6] reports two cases of exostosis in which he has operated with success, in one through the meatus on a deeply-situated sessile growth, with chisels, being very careful to take away that part of the meatus from which the exostosis arose; in the other, there being a chronic purulent discharge, Stacke's radical mastoid operation was performed, and the bony masses were removed *viâ* the mastoid. Wm. Hill,[7] in reviewing the question of exostoses and hyperostoses, notes the difficulty in determining the causation, and advocates Stacke's operation if there is discharge, or even if there is great difficulty in removing the growth through the natural channel.

Membrana Tympani.—As an anæsthetic for operations on the membrane, Bonain[8] recommends the following :—

℞ Carbolic Acid Hydrochloride of Cocaine	Menthol	equal parts

To be applied to the membrane on a pledget of wool for from three to five minutes before operation.

Perforations may be congenital or caused by disease or traumatism. The first are very rare, the third as a rule soon heal, and except from the medico-legal point of view, are comparatively unimportant, while those falling into the second category, are numerous and important. A great deal of attention has been paid to the closing of perforations left after chronic suppuration of the middle ear. Of course, while the suppuration continues, no attempt can be made to close the perforation. Many observers approve of the application of **Trichloracetic Acid** to the edges of the perforation after suppuration has ceased. Politzer and Biehl[9] have published several cases of successful closure under this treatment.

Yearsley[10] gives a series of cases of *injuries of the membrane*, caused by hair-pins, tooth-picks, etc., and advises that after a thorough purification, the treatment should consist in placing sterilised gauze in the external meatus. (Above all things, syringing and inflation are to be avoided.—D. G.)

Chronic Catarrh of the Middle Ear.—Mayo Collier[11] insists that a minute and careful study of affections of the nose is a necessary preliminary to a proper understanding of this and other diseases of the ear, and shows that in Eustachian stenosis due remotely to nasal catarrh or obstruction, the condition of the nose must be rectified before the affection can be properly dealt with. Snow[12] also effected marked improvement in hearing in a series of cases in which nasal catarrh and obstructions have been treated. Pynchon and Haug[13] give details of the technique of tympanic inflation *viâ* the Eustachian tubes, Haug showing the especial danger of inflation in acute middle ear catarrh.

Sclerosis of the Middle Ear.—In this disease, Castex[14] advises that the ossicles should be "massaged" by means of inflation through the Eustachian catheter, and that **Bromides** and **Iodides** should be administered. Webster[15] recommends the mobilisation of the ossicles by means of Siegle's speculum washed with an air pump and electric motor. Faraci[16] is in favour of the surgical mobilisation of the stapes only, following myringotomy. For similar sclerotic cases, Grant[17] has used with success in several cases mechanical vibration applied to the spine, the instrument consisting of a small motor, on the axle of

which is placed eccentrically a brass disc. The instrument is pressed against the spine between the shoulders, and gives a series of slight jars which are probably transmitted to the bones of the middle ear. Oppenheimer[18] considers that a chronic rheumatic process is the main causative factor in many cases of sclerosis of the middle ear. Yearsley[19] has tried the effect of **Thyroid Treatment** (which has been greatly lauded) in cases of sclerosis and ossicular ankylosis, but has found that "in no case did any benefit ensue from the treatment."

Acute Otitis Media.—In reviewing the subject, the editor[20] of the "American Journal of Medical Science" maintains that acute mastoiditis following cases of this sort is invariably due to the meddlesome introduction of drops or of syringing, and insists that masterly inactivity is the ideal treatment. Menière[21] advises the thorough washing out of the tympanum *viâ* the Eastachian tube.

Jones[22] strongly advocates that in cases of acute otitis media, the cases should be carefully watched, that paracentesis should not be performed unless there is almost a certainty of pus being present, and that instead a cold Leiter's coil be applied to the ear. If acute constitutional symptoms arise, an operation should at once be undertaken. The operation should consist in opening the mastoid cells down to the tip, and in some cases the antrum also would have to be opened. By so doing, the discharge usually stops, the membrane heals, and the hearing is entirely restored. Jones also advocates the opening of the antrum in every case in which, the acute stage having passed over, the discharge centres. Torticollis has been found by Haug[23] in certain cases to be due to acute inflammation of the middle ear, and to have at once disappeared on performing paracentesis of the membrane. It is therefore advisable in every case of torticollis in children, to have the ear carefully examined.

Chronic Suppurative Otitis Media.—Goldstein,[24] while admitting that in many cases of chronic suppuration, the usual treatment of syringing etc., is of great use, considers that sufficient stress is not laid on the advantages of a **Dry Dressing,** in suitable cases. He uses a gauze packing, with nasophen instead of boracic acid or other powder.

In order to show the *Dangers of Suppuration in the Middle Ear*, H. E. Jones[25] read, at Edinburgh, a paper giving full details of seven fatal cases, and concluding "that the most important study of all in connection with this subject was the early detection of suppuration in the attic and antrum, or internal ear, whether in chronic or acute suppurative otitis, and more especially in the latter, in which the mischief spread with much greater rapidity." Ostino,[26]

using a modification of Okuneff's process, **Auscultates the two Mastoids** simultaneously; while a tuning fork is vibrating on the vertex, if the sound is heard distinctly less well at one mastoid, there is probably some deep-seated mischief in that mastoid.

In regard to the advantages of "*Operative Interference on the Drum and Ossicles in Chronic Middle Ear Suppuration*," Cheatle[27] has obtained the opinions of many distinguished aurists on the Continent, in America, and in England.

The general conclusions are :—

(1,) Ossiculectomy is exceedingly useful in suitable cases.

(2,) Where the ossicles are found to be carious, or where there is disease of the upper tympanic spaces, ossiculectomy is especially indicated.

(3,) Hearing is improved, rather than made worse, by ossiculectomy.

(4,) Ossiculectomy does not prevent a subsequent radical mastoid operation.

(5,) Ossiculectomy should of course not be performed till the ordinary treatment has been carefully tried.

Operations on the Mastoid.—Milligan[28] opened a discussion at the British Medical Association, on "Antrectomy as a means of treatment in Suppurative Middle Ear Suppuration." He advocated an earlier resort to a mastoid operation in cases of middle ear suppuration, and thinks that when a discharge has continued for a year, and careful treatment for three months has been unavailing, the mastoid should be opened. He gave a careful analysis of one hundred and fifty of his cases of mastoid operation.

Stiles[29] points out the difference of the anatomy of *the temporal bone of the child* and that of the adult, and warns operators of the especial danger of wounding the facial nerve (after its exit from the skull) in children.

Dangerous Sequelæ of Suppurative Inflammation of the Middle Ear.—Gradenigo,[30] in examining some six hundred and fifty cases of *Intracranial Complications of Middle Ear Suppuration*, finds that only in a very few cases is there a note of any ophthalmoscopic examination. He maintains that in chronic suppurations, papillitis is a sure indication of intracranial invasion. Although an ophthalmoscopic examination is most important, and should never be omitted, Gradenigo's opinion is probably a little too absolute.

Barr[31] narrates two cases in which rigors and high temperature occurred along with notable inflammatory changes in the outer wall of the lateral sinus. Recovery took place after the evacuation of

an extradural collection of pus. The writer, therefore, considers that the signs and symptoms described, do not necessarily call for opening of the sinus or ligation of the internal jugular vein.

Whiting[32] formulates the indications for ligation of the jugular vein in thrombosis of the sigmoid sinus as follows :—

"*First.*—The indications which justify an operator in tying the jugular before exposing the sinus should be very decided and as follows : (*a*,) The existence of chronic otorrhœa ; (*b*,) Pronounced manifestations of pyo-septicæmia, high fever, sudden remissions, and repeated rigors ; (*c*,) Metastases; (*d*,) Griesinger's symptom, occipital œdema ; (*e*,) Œdema of eyelids of corresponding side ; (*f*,) Tenderness along the course of the jugular in the neck, and perhaps the cord-like feeling of the infected vein ; (*g*,) Beginning neuro-retinitis. A majority of these symptoms should be present.

"*Second.*—The indications for ligature after exposing the sinus and recognising the thrombosis, but before opening it : (*a*,) The presence of a clot extending well down into the bulb, and disintegrated in its lower portion (as indicated by aspirator), associated with distinct pyæmic symptoms, although metastases are absent ; (*b*,) The display by the sinus of respiratory movements would render probable the admission of aërial embolism to the heart unless the vein were first tied.

"*Third.*—Indications for ligation after exposing and opening the sinus : (*a*,) The presence of a large thrombus, extending down into the bulb, and having undergone purulent liquefaction in the deep bulbous portion, which may not have been diagnosed until the sinus was extensively opened ; the curetting deeply in the neck under such conditions is fraught with imminent risk to the patient unless the vein is tied ; (*b*,) Inability to re-establish the circulation from below, whether the clot has or has not disintegrated, and whether or not there has been tenderness in the neck ; (*c*,) Inability to re-establish the circulation from either direction, has aroused some discussion as to the advisability of ligating both jugulars."

Ear Disease in relation to Life Assurance.—At the meeting of the British Medical Association in Edinburgh, in 1898, a discussion on this question was opened by Dr. McBride, with a general review of the subject. Dr. Barr pointed out that the cases fatal from ear disease died as a rule before the age at which insurance is generally sought. Prof. Urban Pritchard considered that with purulent cases the life should usually be declined altogether, postponed, or heavily rated, while Mr. G. M. Low, an actuary, thought that as deaths from ear disease were not more than 1 in 1,000, cases of slight ear disease

might be taken at ordinary risks. Others thought that each case should be taken or rejected on its own merits, but some broad principles are evidently needed.

Labyrinth.—Patrick[33] recounts an interesting case of *Menière's Disease* in a girl of eighteen She was stooping down, heard loud noises in the left ear, with immediate complete deafness on that side. There was within a few hours marked giddiness, with vomiting, which lasted for four days. Tinnitus and unilateral deafness remained permanently. Only general treatment was carried out. Pilocarpine injections were suggested, but refused by the patient. (It is doubtful whether pilocarpine would have influenced the result so far as the persistent deafness was concerned, but in such cases it is certainly worthy of a trial.—D. G.)

Burnett[34] emphasises the now well-recognised fact that cases of "ear vertigo" need not necessarily be cases of "Menière's disease." Believing in one of his cases that the vertigo was due to sudden retraction and impaction of the stapes, he removed the incus and cured the patient of his vertigo.

Malignant Disease, especially sarcoma, is a bugbear always to be feared when operating on the mastoid process for what at first seems to be a simple case of mastoid abscess. Such cases of course, form a very small percentage of the total number operated on, but the possibility of the danger has constantly to be kept in mind.

Cheatle[35] relates an interesting case of *Sarcoma of the Middle Ear.* A female child, aged two and a half years, was seen with a large, diffuse, fluctuating swelling behind the left ear, while a pedunculated polypus filled the external meatus. There was a history of suppuration for some months. A complete operation was performed, and the case still appeared to be a simple one. The child did well, and left the hospital. After a month at the seaside, the child returned with left facial paralysis. Behind the left ear there was a fungating mass of about the size of a small orange, pushing the ear forward. Subcutaneously the tumour passed into the deeper regions of the neck. At the time of the child's death, some five months after the original operation, and two months after the return to the hospital, the tumour was nearly as large as the child's head. Through an opening in the temporal bone, the growth continued into and occupied the middle fossa of the skull. The lateral sinus was quite normal. A microscopical section proved the growth to be a sarcoma, chiefly consisting of small spindle cells.

Tinnitus Aurium.—**Cimicifuga Racemosa,** in doses of from 15 to

30 minims of the tincture daily, has been used recently with success in the treatment of this symptom by Mendel.[36]

REFERENCES.—[1]"Maryland Med. Journ.," xxxix, p. 20; [2]"Hospital," Aug. 20, 1898; [3]"Louisville Med. Monthly," July 1898; [4]"Laryngoscope," Dec., 1898; [5]"Journ. de méd. et de chir.," Sept. 10, 1898; "Journ. of Laryngol.," Aug., 1898; [7]"Practitioner," Oct., 1898; [8]"Rev. hebdom.," July 16, 1898; [9] Report of Austrian Med. Soc., in the "Journ. of Laryngol.," Aug., 1898; [10]"Treatment," June 22. 1899; [11]"Lancet," Oct. 15, 1898; [12]"Laryngoscope," Dec., 1898; [13] Ibid., Nov., 1898; [14]"Journ. des Praticiens," Nov. 18, 1898; [15]"Laryngoscope," April, 18 9; [16]"Arch. Ital. di Otol.," vii, 4; [17]"Brit. Med Journ.," Oct. 22, 1898; [18]"Laryngoscope," Dec., 1898; [19]"Brit. Med. Journ.," Oct. 22, 1898; [20]"Amer. Journ. of Med. Sci.," Oct., 1898; [21]"Gaz. des Hôp.," March 22, 1898; [22] "Liverpool Med. Chir. Journ.," Jan., 1899; [23]"Arch. f. Ohrenh.," Sept., 1897; [24]"Laryngoscope," Dec., 1898; [25]"Brit. Med. Journ.," Oct. 22, 1898; [26]"Ann. des mal. de l'oreille," March, 1899; [27]"Practitioner," Oct.," 1898; [28]"Brit. Med. Journ.," Oct. 22, 1898; [29]Ibid., Oct. 15, 1899; [30]"Ann. des mal. de l'oreille," Dec., 1898; [31]"Brit Med. Journ.," Oct. 22, 1898; [32]"Arch. of Otol.," Feb., 1898; "Journ. of Laryngol.," June, 1898; [33]"Glasgow Med. Journ.," June, 1899; [34]"Amer. Journ. of Med. Sci.," April, 1899; [35]"Brit. Med. Journ.," Oct. 22, 1898; [36]"Journ. des Prat.," July 16, 1898; "Laryngoscope," Dec., 1898.

ECLAMPSIA (Puerperal). (See "Labour.")

ECZEMA. *T. Colcott Fox, M.B.*

Interest centres around the strenuous efforts being made to acquire some more accurate knowledge of the etiology of the inflammations of the skin grouped as eczema. Last year we referred to the discussion at the Edinburgh Meeting of the British Medical Association, and the views of Leslie Roberts, who regards eczema as essentially an overgrowth and œdema of the epithelium from adventitious stimulation, not of hæmic origin.

Unna[1] devotes a fasciculus to the histology of the subject. He notes the presence of, and figures, microbial masses (morococci), in all his sections. Are they to be considered as provocative agents or as harmless concomitants? The isolation and pure cultivation of such organisms in the skin is a matter of some difficulty, and further proof of their casual relationship is awaited.

Leredde, of Paris, meanwhile published a brochure arguing strongly in favour of the parasitic theory, though not necessarily upholding Unna's micrococcus and not adding any original work of his own. Amongst other evidence he relies on: (1,) The assumed auto-inoculability of eczema; (2,) The ready development of eczema from cutaneous fissures; (3,) The demonstration afforded by the multiplicity of causes

with identity of effects. The latter can only be explained on the assumption that a modification of the cutaneous soil permits the development of parasites. Leredde denies that eczema is an "inflammation banale," and holds that it is a specific inflammation or a form of it (for there may perhaps be several parasitic eczemas), which can only be explained as due to toxic or parasitic agencies. In France artificial dermatitis arising from external agencies is regarded as distinct from the specific inflammation called eczema, which is held to be of diathetic origin. Clinically, he says, the distinction can be made in the immense majority of cases, and directly the irritant causing the artificial dermatitis is removed the inflammation subsides, whilst in true eczema there is not the same tendency to recovery. Nevertheless, French authors admit that external causes can provoke true eczema in those predisposed. Why then, asks Leredde, should washerwomen be so specially predisposed? Thus, the French theory does not account for the frequency of true eczema of external origin, and none of the old theories explain simultaneously eczemas of internal and external origin. The parasitic theory alone reconciles all the facts.

Török,[2] of Buda-Pesth, who previously wrote on the significance of eczematous lesions and the general reactions of the skin, sharply criticises Unna's parasitic theory and Leredde's arguments. He draws a distinction between the *eczematous lesion*, which he regards as *banale*—that one can produce artificially and that arises under the action of most diverse causes—and maladies which are actually comprised in the category of eczema. Thus, maladies of very different nature, including artificial dermatitis, can present with a similar clinical aspect and the histology of eczema, whilst all other attributes are different. Eczematised lesions, "simili-eczémas" of Besnier, can be provoked in *all* individuals, but not "eczema." Artificial dermatites may assume characters quite distinct from eczema, but they also may present the eczematised aspect.[3]

R. Sabouraud,[4] in a *critical essay on the Etiology of Eczema*, seeks to throw the problem before us of the parasitism *versus* the diathetic origin of eczema into proper form. This masterly essay is admirably written, and will well repay careful study. He points out that we are not agreed on the affections to be included under eczema, and therefore a definition is so far impossible. Similarly, those who think it a diathetic malady cannot define the diathesis, and an analysis of the microbial aspect is also impossible until more work on it has been accomplished. Any general discussion, therefore, must be unsatisfactory until the subject has been attacked bit by bit.

Audry,[5] of Toulouse, reviews at some length the so-called *Eczema seborrhœicum*, which includes half the cases of eczema (Unna), or 28 per cent. (Elliott), or 40 per cent. (Audry). The space at our disposal will not permit of an analysis. Arthur Whitfield[6] also discussed the *Varieties of Eczema and their Treatment.*

With regard to *internal medication* Neuberger-Nürnberg[7] has treated thirty children, varying from two to five years of age, with small doses of **Arsenic.** The treatment consisted in giving a child two years of age and over, Fowler's solution ♏j, aqua destill. ♏j ; this amount was given once a day after a meal, and continued for one or two weeks. The dose was increased in the third and fourth week to 2 or 3 drops. The amount given never exceeded 7 drops a day. In infants and children under two years of age, Fowler's solution 1·5, aqua destill. 3·5, was given, and the dose in these cases never exceeded 5 drops a day. The infants took the arsenic well. The author was satisfied with the results, but often there is no sign of improvement till fourteen days have elapsed.

H. B. Trehane Symons, of Luxor, writes in the "British Medical Journal" that he has obtained good results in one or two cases of dilatory eczema from the administration of 10 minims of **Tincture of Belladonna** thrice daily.

Amongst applications of the older medicaments we note the following: Edlefsen[8] orders for eczema of the hands and fingers an **Iodine Paint** consisting of pure iodine 0·1, potassium iodide 0·25, glycerin 12 parts ; to be applied every evening, and the hands enveloped in lint. In the more obstinate cases boric acid ointment was applied in the morning and the iodine paint in the evening. L. D. Ellis[9] also speaks favourably of a 1 per cent. alcoholic solution of iodine in most stages of eczema.

F. Radaeli[10] reports the results of a trial of **Picric Acid** in different forms of eczema in Pellizzari's clinic in Florence. The affected part was first freed from scabs, etc., the hair cut as short as possible, and the whole region thoroughly washed with boracic acid solution. When the part had been dried, applications of a saturated watery solution of picric acid were made with pledgets of cotton ; then a compress wrung out of the same solution was applied, and over this was placed a layer of cotton-wool, the thickness of which was proportionate to the abundance of the secretion. The whole was kept in place by a bandage. The dressing was left on for one or two days. The author points out the special convenience of the picric acid dressing in acute eczemas where there is much "weeping," as it does not require frequent changing. On the other hand, the remedy has the disadvan-

tage that it causes great smarting in the parts to which it is applied. This, however, ceases completely in ten or fifteen minutes, giving place to a sense of relief which is mainly due to the cessation of itching.

Dr. Comby [11] uses the following :—

R Starch Powder		Subnit. of Bismuth	grs. ccc
Talc		Salicylic Acid	grs. xv
Lycopodium	āā grs. ccc	Menthol	gr. ss

Dermatol, aristol, etc., may be employed in the same way.

Amongst new remedies tried we may note **Ichthalbin**, a combination of albumin with ichthyol resembling Gottlieb's tannalbin. Homburger [12] found it had no effect on the irritation, but the exudation was markedly reduced. He makes the significant remark, however, that it does not cure without local applications. For children under half a year old 0·05 to 0·1 grm. is given three times daily ; from half to one year, 0·15 to 0·2 grm. ; and from one to two years, 0·2 to 0·3 grm.

Jonathan Hutchinson got excellent results in a case of obstinate "pruriginous eczema" from the free use of a wash containing 10 grs. of **Chinosol** dissolved in a pint of water.

Merlin [13] experimented with **Naftalan** in seventy-nine cases, including ulcers of the leg and foot, sycosis, impetigo, acute and chronic eczema, and burns. Good results were also obtained in sycosis and acute and chronic eczema. In a case of severe weeping eczema of the scrotum, the irritation of which caused sleepless nights, the application of naftalan after three days enabled the patient to sleep, and the eczema was cured in four weeks. No irritation appears to be caused by the application.

Gerder,[14] of Stanfen, records a striking cure of universal inveterate eczema by **Naphthalin.**

Acholedani [15] also used naphthalin in forty-three acute and chronic cases of eczema as a 10 per cent. lard ointment after drying up any exuding surface with a zinc powder. During the second week olive oil is applied. In chronic cases a rather stronger ointment is used and the olive oil applied from the outset.

Landau has used **Tannoform** (produced by the action of formic aldehyde on tannin), and cured his cases (twenty-three) in about four days each. It is given internally as an active intestinal disinfectant and astringent in doses of from grm. 0·10 to 0·50 every three or four hours, and four or five times daily if necessary, whilst locally it may be used as a 10 per cent. ointment or dusting powder.

Ehrmann [16] found tannoform, 3 parts, with lanolin and ung. simplex, each 15 parts, a very useful ointment for checking acute eczemas

resulting from trades and occupations. The ointment should be spread on linen and changed night and morning. Tannoform, 1 part, with 4 or 5 of talc forms a useful dusting powder.

Unna[17] employs **Oxidised Chrysarobin**, obtained by the action of sodium peroxide on chrysarobin suspended in water, in eczema and other cases where the action of ordinary chrysarobin is too irritating. It is applied in the following ointment: Oxidised chrysarobin, 2 to 5; vaseline and lanolin, of each 25.

In the treatment of small patches of *Seborrhœic Eczema*, especially of the face, Frickenhaus[13] has found an **Alcoholic Solution of Resorcin** of much service. The affected spots should be rubbed vigorously with a morsel of cotton-wool dipped in 25 per cent. solution of resorcin in alcohol, and the patient is given a 10 per cent. solution to use in the same way at home every evening for three days. The patches will then be found to be covered over with a pellicle, which is in part detached. Still, the resorcin solution must be continued in the evenings for some days longer, and in addition the patient applies at night to the affected places some lanolin cream. The cure is usually complete in about eight days.

In cases where economy is of importance, the resorcin may be replaced by salicylic acid; 5 grms. of salicylic acid may be dissolved in 25 or 30 grms. of spirit. With this also, as soon as the scaling begins, lanolin cream should be used.

REFERENCES.—[1] "Hist. Atlas für Path. des Haut," Heft 2, 1898; [2] "Ann. de Derm. et de Syph.," p. 1397, 1896; [3] Ibid., Dec., 1898, and Jan., 1899; [4] Ibid., April, 1899; [5] Ibid., Feb., 1899; [6] "Harv. Soc.," Feb. 16, 1899; [7] "Arch. f. Derm. u. Syph.," vol. xlvii, part 2, 1899; [8] "Therap. Monats.," Feb., 1898; [9] "Brit. Med. Journ.," Nov. 26, 1898; [10] quoted "Brit. Med Journ." from "La Settimana Medica, Feb. 18, 1899; [11] "Gaz. hebd. de méd. et de chir.," June 23, 1898; [12] "Therap. Monats.," July, 1899; [13] "Wien. med. Woch.," No. 5, 1899; [14] quoted from "Therapist," Dec. 15, 1898; [15] "Treatment," quoted from "Voy. Med. Journ.," July, 1898; [16] "Wien. Med. Blätter," No. 46, 1898; [17] "Bull Gén. de Thérap., cxxvi; [18] "Monats. f. Pract. Derm.," No. 11, p. 556, 1899.

EMPHYSEMA.

Synopsis.—(Vol. 1897, pp. 162 and 224). **Bromoform**, 12 to 18 mins., in capsule for the asthma. **Respiratory Exercises.** (Vol. 1899, p. 69) Thiol rubbed into chest.

ENDOCARDITIS (Gonorrhœal). (See 'Septicæmia.")

ENDOMETRITIS. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

ETIOLOGY.—There is a growing tendency among writers on endometritis to ascribe the affection to the action of micro-organisms. The pathology of the condition is, however, rendered rather complex

by the fact that even when such an origin may be fairly assumed, microscopical examination reveals the characteristics of new growth rather than those of inflammation. Acute endometritis is rarely found except in association with gonorrhœa and puerperal septicæmia, and we do not propose to enter upon its consideration here. Chronic endometritis is usually met with, not as a sequela of the acute condition, but as having run a chronic course from its onset. As far as its clinical phenomena are concerned it is hardly to be distinguished from those cases in which the microscopical examination shows a condition of proliferation of glandular tissue.

Diagnosis.—Whilst the clinical diagnosis of endometritis presents no special difficulties, it will be found, from what we have just said, that for exact pathological diagnosis we must depend on the microscope. On this subject, perhaps the most important recent contribution is that of Arnold Lea.[1] He classifies the various conditions that may be met with as follows :—

(*a*,) *Chronic Endometritis.*—This occurs in three chief forms: (1,) Glandular endometritis, in which there is great hypertrophy of the glands ; (2,) Interstitial endometritis, "in which the most extensive changes are met with in the connective tissue stroma, which is infiltrated with round cells ;" (3,) Villous or polypoid endometr tis, in which there is a combination of the first two varieties.

(*b*,) *Benign Adenoma Uteri.*—Here the endometrium presents numerous irregularities and polypoid projections from its surface. It is the "villous, polypoid, or fungous endometritis" of many writers on this subject. "Hæmorrhagic endometritis" is a term also which has been applied to it. It may, however, be more correctly described as a "diffuse adenoma of the uterine mucosa." The growths are usually numerous, varying in size, but the largest not exceeding the size of a pea ; they may be sessile or pedunculated. The surface "is covered by columnar ciliated uterine epithelium" which is healthy, in a single layer, as is that lining the tortuous glands. The growths are very vascular, and "as the stroma is often loosely disposed, capillary hæmorrhages are frequent." Occasionally these growths are found singly in the uterus and may attain a large size. When pedunculated they may protrude through the os uteri, and are then clinically termed "mucous polypi." Owing to the occurrence of irregular and often continuous hæmorrhage, the condition may simulate early malignant disease. The author considers that the microscope enables an almost certain diagnosis to be made.

(*c*,) *Fibro-adenoma.*—This is a rarer condition. In the benign adenoma a little fibrous tissue may be sometimes discovered, but in

fibro-adenoma "the tumour is usually much larger, and its main bulk is made up of fibrous connective tissue with numerous glands."

(*d*,) *Malignant conditions of the Endometrium.*—These include sarcoma, with its possible subdivision of "deciduoma malignum," and carcinoma. The latter presents two varieties: (1,) Epithelioma, where solid branching columns of epithelium invade the mucosa; (2,) Adeno-carcinoma, or malignant adenoma, of which the chief characteristics are: (1,) Many alveoli are entirely filled with cells, which also markedly invade the stroma; (2,) The glandular spaces are numerous, very much branched or lying in parallel columns; (3,) Scanty stroma, containing large nucleated spindle cells, and very vascular.

Senile Endometritis, which requires separate consideration on account of the altered anatomical conditions following the menopause, has been well described by Lorain.[2] He defines it as an inflammatory condition of the uterine mucous membrane, occurring at a period when the genital apparatus has undergone the anatomical and physiological changes included under the term of "senile involution."

The disease is therefore distinct from the metritis which is associated with the menopause, and which is recognised as the predisposing cause of the circulatory troubles of which the uterus is the seat at that period.

As with other inflammatory conditions of the uterus, this disease is due to infection with micro-organisms. Staphylococci, gonococci, and Koch's bacillus have all been found to be present by different observers.

The disease is a somewhat rare one, forming a little over 7 per cent. of all cases of endometritis; it occurs most frequently in women whose age ranges from fifty to sixty. Such cases form about two-thirds of the total number, the remainder being divided equally between women of forty-five to fifty, and sixty to seventy respectively.

Diagnosis is of the greatest importance, since the symptoms resemble those of cancer of the body of the uterus.

The points in common between endometritis and cancer of the body of the uterus are:—

(1,) Blood-stained discharge coming on after the menopause.

(2,) Offensiveness of the discharge.

(3,) Periodic pain.

(4,) Cachectic condition.

There are however distinguishing characteristics. Thus:—

Metrorrhagia always present and occasionally profuse in cancer, whereas in endometritis it may be absent, and is rarely large in amount.

Offensiveness of the discharge is found at an earlier period in endometritis than in cancer; the discharge, moreover, is less purulent and more serous in cancer than in endometritis.

Pain may be quite absent, and is rarely intense in endometritis; in cancer, on the other hand, it is almost always present, except in the very early stages.

Cachexia is the same in the two cases, but in endometritis it soon ameliorates as the result of treatment, whereas in cancer it becomes progressively worse.

TREATMENT.—The three chief methods of medication are by means of the **Douche, Tamponade** and **Intra-uterine Applications.**

Dudley[3] lays down some practical directions on these matters. He maintains that the good results of **The Douche** will be realised only by the strict observance of the following rules in its application as laid down by Emmet :—

ORDINARY METHOD OF APPLICATION.	PROPER METHOD OF APPLICATION.
(1,) The douche is ordinarily applied with the patient in the sitting position, so that the injected water cannot fill the vagina and bathe the cervix uteri, but on the contrary returns along the tube of the syringe as fast as it runs in.	(1,) It should invariably be given with the patient lying on the back, with the shoulders low, the knees drawn up, and the hips elevated on a bedpan or rubber sheet, so that the outlet of the vagina may be above every other part of it; when the vagina will be kept continually over-flowing while the douche is given.
(2,) The patient is seldom impressed with the importance of regularity in its administration.	(2,) It should be given at least twice every day, morning and evening, and generally the length of each application should not be less than twenty minutes.
(3,) The temperature is ordinarily not specified or heeded.	(3,) The temperature should be as high as the patient can endure without distress; it may be increased from day to day from 100° or 105° to 115° or 120° F.
(4,) Ordinarily the patient abandons its use after a short time.	(4,) Its use, in the majority of cases, should be continued for weeks at least, and sometimes for months. Perseverance is of prime importance.

The Tampon is often used as a carrier of glycerin to cause a watery discharge from the genital tract and thereby to deplete the vessels and overcome congestion.

A tampon which is left in for more than twenty-four hours becomes offensive and a possible hot-bed of infection. It should therefore be removed on the day following its application. Its common, indiscriminate, routine use should be discouraged. Its therapeutic value has been much overestimated. If used at all, it should be applied daily. One or two applications a week have little value, except possibly that of suggestion.

Intra-uterine Applications.—The permanent arrest of a long-standing uterine discharge by topical applications to the endometrium is seldom accomplished. The treatment as ordinarily applied does not reach the disease, because it is not only not indicated, but is injurious in the vast majority of cases for which it is used.

Intra-uterine applications are usually effective in proportion to their energy. Only those which have the power to destroy the diseased structures are capable of arresting the discharge. In doing this, however, they may destroy the endometrium, injure the myometrium, and reduce the uterus to a cirrhotic-like, cicatricial condition. Sterility and permanent irritability of all the pelvic organs are the natural results.

Innumerable drugs and chemicals have been lauded for intra-uterine medication. **Carbolic Acid** and **Iodine** probably meet the requirements in glandular endometritis so far as topical treatment can meet them. In interstitial endometritis ichthyol, although useful, has not entirely fulfilled its early promise.

When the disease is distinctly infectious and chronic, topical and systemic treatment are both inadequate, although both may properly supplement surgical measures. The diseased portion of the endometrium must be removed by the **Sharp Curette**. If this operation is thoroughly performed so as to remove the most infectious portion of the endometrium, it is relatively free from danger, offers a reasonable prospective relief and the curetted mucosa is rapidly reproduced.

In the treatment of catarrhal erosion of the cervix in nulliparæ, where there is no question of laceration, Mundé[4] strongly advocates **Excision of the Diseased Tissue.** He believes that mere curetting and cauterisation will not suffice to cure a pathological condition such as exists in this complaint. One can scrape away the diseased glands and papillæ with the sharp curette, but there will be left a raw surface surrounding the external os which will heal but slowly under the use of caustics, and in its place a cicatrix will remain, with probable con-

traction of the os. He has seen this frequently in cases treated by other physicians, especially in former years when the sticks of nitrate of silver were so commonly used to cure erosions of the cervix. The resulting sterility was the cause of his being consulted. It may take weeks and months for such an erosion to heal firmly, and a recurrence of the erosion is not impossible.

The operation is exceedingly simple, and consists merely, after curetting the whole endometrium (the sharp curette in the cervical cavity), in excising with slightly curved sharp scissors or sharp slender knife the entire diseased tissue to the depth of half an inch in converging directions. The cervical cavity then has the shape of a funnel. The raw surfaces are then united by deep sutures, either silver wire, which he prefers, as it can be allowed to remain as long as desired and assures greater certainty of permanent union, or catgut, which will answer very well in minor cases.

Usually two or three sutures on either side will suffice. As the whole tissue surrounding the external os is excised, it is necessary to prevent the complete closure of the cervical canal and os by passing a thin strip of iodoform gauze through it into the uterine cavity. This is changed every forty-eight hours for a week or ten days, when the patient may be allowed to leave her bed and can be discharged, returning after the next menstrual period to have the sutures removed, if they are wire, or to enable the surgeon to see whether the external os is normal in size and not contracting. It is well to advise such patients to call several times, at intervals of one or two weeks, for the passage of a large (Peaslee's) sound, in order to prevent the contraction which so readily follows plastic operations on the cervix.

Of course no cauterisation of the endometrium by iodine or any other agent is employed when this plastic operation is performed.

Grammatikati[5] speaks highly of daily **Intra-uterine Injections** of equal parts of **Tincture of Iodine** and 95 per cent. **Alcohol,** in the treatment of endometritis. He claims that the daily use of such injections for a longer period, especially in congestive and inflammatory affections of the female genital organs, leads to a temporary cessation of menstruation, and in fact to a complete state of physiological rest of these organs, in which the Graafian follicles cease to mature in the ovaries, and there is no monthly change in the uterus.

He refers to a case in which there was considerable improvement after one hundred and fifteen injections. The probability is that most surgeons would prefer a more radical method of treatment to one requiring such numerous applications.

The treatment of endometritis, especially the form associated with

metrorrhagia, by the **Application of Steam** to the endometrium, which was first suggested by Snegirjeff, of Moscow, has found some adherents, among others Dührssen.[6] That the plan is not without grave drawbacks is shown by a case related by Weiss.[7] A woman aged nineteen suffered from abundant metrorrhagia, for which steam was applied to the mucous membrane of the uterus during scarcely forty-five seconds. Five months afterwards no trace of external os could be found. During an unsuccessful attempt to restore permeability of the uterus, the cervical canal was found partly preserved, but the uterine cavity had entirely disappeared.

The writer concludes that the intra-uterine application of steam is by no means harmless, and should be reserved as far as possible for hæmorrhages in aged persons, at the menopause, in chronic endometritis, and inoperable malignant growths.

In the treatment of senile endometritis Lorain (*op. cit.*) considers that the two main indications are :—

(1,) To allow of *the free escape of the secretions* of the uterine mucous membrane.

(2,) The application of *antiseptics* to the interior of the uterus.

The free escape of the contents of the uterus is of especial importance, since, as long as these are pent up in its cavity, no cure can be expected. Generally speaking, the dilatation of the cervical canal is best effected by Hegar's dilators; but cases arise in which the stenosis of the cervical canal is so advanced that the smallest dilator cannot be introduced ; in such cases dilatation must be obtained with laminaria tents. It is generally sufficient when the passage of Hegar's No. 7 or 8 can be effected, but this will often require two or three sittings at intervals of twenty-four or forty-eight hours. After dilatation, one of the following solutions should be applied to the cavity of the uterus :—

℞ Creasote, Glycerin, Alcohol, āā æq. par.

or,

℞ Ichthyol partes x | Glycerin partes xl

or,

℞ Pure Tinct. of Iodine

The treatment should be renewed two or three times a week, and in the intervals a drain of antiseptic gauze should be left in the uterus, a tampon of similar gauze being left in the vagina.

As the cervical canal tends to contract up again between the dressings, it will be found necessary to further dilate it from time to time.

The duration of treatment carried out according to the above

principles will be found to be approximately from three to four weeks.

It should be remembered that there is a fairly large proportion of cases in which chronic endometritis will not yield to intra-uterine applications, but requires surgical interference in the form of curetting. We need not here enter upon the subject of curettage, about which there is at present nothing new to be said. But in view of recent writings we may say a word on *the risk of perforation of the uterus* with the dilator or curette during the operation. Phillips[8] has collected some interesting recent reports on the subject. When a sound or dilator passes further than the size of the uterus warrants, there are, according to various writers three possible explanations :—

(*a*,) That the uterine muscle becomes relaxed or even elastic, allowing of elongation of the uterine cavity. This is the view Beuttner[9] takes in two cases.

(*b*,) That the sound has passed up into a Fallopian tube. The possibility of this was formerly denied, by Schultz among others. Ahlfeld[10] related a case in which he succeeded, to his satisfaction, in sounding the tubes, declaring that he could prove his feat by bimanual palpation. Floeckinger,[11] however, claims to have settled the question last January at an operation where a suspicion that he had previously sounded the tube was proved to the eyes as well as to the touch. The patient was a very young married woman, under eighteen years of age ; the uterus had to be explored in order to remove some placental relics ; its cavity measured three and half inches, and a small subperitoneal myoma was detected on bimanual palpation. The sound was once more introduced ; it slipped inwards, without resistance, up to the handle. On palpation it could be felt passing along and beyond the left uterine cornu. These observations were made in August last year. In January, as the patient suffered badly from hæmorrhage, Floeckinger removed the pedunculated tumour through an abdominal incision. The sound was first passed up to its handle, strict antiseptic precautions being taken. It was found to lie partly in the left tube, which was greatly stretched, as was also the uterine wall. He succeeded in catheterising the right tube also at the operation. Jahreiss[12] claimed that this was the explanation of two cases in which a curette suddenly passed some distance towards the uterine cornu ; but he adduces no evidence.

(*c*,) The third explanation is perforation of the uterine wall. This is the most likely, and cases are reported in which the accident was demonstrated. Thus Courant[13] relates a case of curetting for hæmorrhage: The sound during the operation passed 20 to 25 c.m., and

bleeding was free. Abdominal section was performed, and a perforation of the uterine wall was found on the posterior wall, and Douglas's pouch contained a considerable amount of clotted blood.

Brothers[14] relates the following: A primipara, aged thirty-seven, was the subject of uterine prolapse with laceration of the pelvic floor. Under an anæsthetic the cervical canal was dilated and the curette used. It passed in four and half inches. The operator, feeling that the instrument had either perforated the wall or passed into a Fallopian tube, desisted from further procedure and packed with gauze. He then decided to explore to ascertain the actual damage done. The bladder was separated from the vagina in the usual way, and the anterior peritoneal sac opened. The tubes were tied each in two places and cut through. On passing the finger over the fundus uteri, a rent was felt with the gauze protruding.

A case is reported by Rosenfeld[15] in which the accident was verified in a somewhat similar manner, and Elder[16] also has recently recorded two cases of this accident.

REFERENCES.—[1] "Med. Chron.," 1898, No. 2, p. 81; [2] "La Rev. méd.," 1898; [3] "Med. Standard," April, 1898; [4] "Amer. Journ. of Obst.," May, 1898; [5] "Vratch.," No. 25, 1898; [6] "Berlin. klin. Woch.," 1898; [7] "Centralb. f. Gyn.," June 18, 1898; [8] "Pract.," Oct., 1898; [9] "Centralb. f. Gyn.," 1897, No. 42; [10] Ibid., 1897, No. 47; [11] Ibid., Aug. 27, 1898; [12] Ibid., 1898, No. 6; [13] Ibid., 1897, No. 48; [14] "Amer. Journ. of Obst.," April, 1898; [15] "Centralb. f. Gyn.," 1898, No. 11; [16] "Med. Press and Circ.," Jan., 1899.

ENTERIC FEVER (in India). *James Cantlie, F.R.C.S.*

Major S. F. Freyer,[1] R.A.M.C., discusses the application of the serum blood test in enteric. From actual observation on natives, he came to the conclusion that but few native children in India escape early typhoid. Major Freyer's observations were made on children. Of three infants at breast, none showed the reaction of immunity; of five children between two and four years of age, four gave the reaction promptly; of six boys, between the ages of ten and thirteen, five gave the reaction of immunity. If, therefore, there is any truth in the serum test, for enteric, the fact of native children in India contracting enteric early in life would seem to be conclusive. There is a wide spread belief that the natives of India enjoy an immunity in typhoid. These observations of Major Freyer's, however, explain the cause of this apparent immunity.

Treatment of Enteric Fever by Carbolic Acid.—Capt. R. C. Thacker,[2] R.A.M.C., reports that he had excellent results by adminis-

tering **Carbolic Acid** in cases of enteric in the Punjaub. His prescription ran as follows:—

℞ Carbolic Acid (Calvert's pure) ♏iv	Comp. Tinct. of Cardam. ♏xx
Sp. of Chloroform ♏xv	Syrup and Water to fl. ℥j

Give four times daily.

This mixture was well tolerated by the stomach, caused no unpleasant symptoms, and was liked by patients.

Inoculation against Enteric.—So favourably impressed are the medical authorities of the British Army with the efficacy of Professor Wright's typhoid inoculation as a preventive against the disease, that 15,000 of the British troops, before proceeding to the front in South Africa were subjected to the treatment.

Typho-malarial Fever (so-called).—Since this term was introduced by Dr. J. J. Woodward, U.S.A., and adopted by Dr. Austin-Flint, severe discussion has raged around it. Dr. George Dock, of Michigan, in the "New York Medical Journal," of September, 1898, gives a masterly account of typho-malarial fever. That the malarial organism can inhabit the blood during typhoid fever is abundantly proved; that the temperature chart may be affected by malarial exacerbations is also believed; but that all "chills" in a case of typhoid fever, or all variations in temperature are to be ascribed to malaria, is evidently a mistake. The presence of malaria can only be positively demonstrated by the presence of the blood parasites, or where such a step is impossible, the therapeutic action of quinine. The drug, however, should not be continued longer than three, or at the most five, days. Some observers declared that if a fever resists quinine, given in full doses for three days, it is not malaria, but in all probability typhoid. Certainly experience affords support to this belief, but not by any means in all instances.

REFERENCES.—[1] "Brit. Med. Journ.," Aug. 7, 1897; [2] Ibid., Sept. 24, 1898.

ENTERITIS.

Synopsis.—(Vol. 1899, p. 30). Dermatol, 8 to 30 grs., in water twice a day.

ENTROPION. (See under "Eyelids.")

EPIDIDYMITIS (**Gonorrhœal**). *C. F. Marshall, M.D., B.Sc., F.R.C.S.*

Letz[1] gives his experience of the use of **Guaiacol** in the treatment of gonorrhœal epididymitis. He uses a 10 per cent. ointment made with vaseline. The scrotum is first washed with soap and ether. The ointment is applied during the acute stage, when there is pain and swelling of the testicle; and fever. According to the author, the

symptoms subside under three or five days of this treatment. In subacute and chronic cases the action is less marked. In the latter cases he recommends Zeissl's ointment of 1 to 2 per cent. of extract of belladonna, with equal parts of unguentum diachyli and simple ointment.

The absorption of the guaiacol is rapid, as shown by its presence in the urine in fifteen to thirty minutes. Its quick elimination is also shown by its absence after twenty-four hours. The author claims to have treated fifty cases successfully in this way.

Cazrot[2] recommends **Salicylate of Methyl** locally in cases of gonorrhœal epididymitis complicated by hydrocele. The scrotum and penis are supported, and three times a day 20 drops of salicylate of methyl are dropped on the scrotum over the affected testicle. An impermeable covering is applied, and some layers of cotton. In three cases quoted the temperature fell, and the effusion was much reduced. In six days all acute symptoms had passed off, and the epididymis was much reduced.

REFERENCES.—[1] "Wien. klin. Runds.," Nos. 4, 5, 6, 1898; [2] "Gaz. hebd. de méd et de chir.," Feb. 19, 1899.

EPILEPSY. (See under "Brain" for surgical treatment).

Græme M. Hammond, M.D., New York.

Roche[1] speaks very highly of the **Bromide of Strontium** in the treatment of this disease. He considers it greatly superior to any other form of bromide because he can continue its use for years without there being any bad consequences, and because it does not cause mental depression. It is not poisonous as, he says, bromide of potassium is, and therefore it may safely be given in as large a dose as may be required to control the attacks.

De Fleury[2] believes that injections of **Artificial Serum** enhance greatly the sedative effect of bromide of potash. Two or three injections of the serum caused a dose of 2 or 3 grains of bromide to act just as well as the enormous dose hitherto given to epileptics, the fits are not nearly so frequent, and the mental condition is greatly improved.

This action of the serum appears to be due to the power which it has of relieving arterial tension and acting as a cardiac tonic.

Schroeder[3] publishes the records of twenty-three cases treated by **Flechsig's Method.** Two remained free from fits for seven months and a half. In all the rest the fits returned again after a shorter or longer interval, but in the majority of cases they were diminished in frequency. The previous administration of bromide made no difference in the result. He thinks the treatment acts better in young people who have

had the disease only for a short time, and considers it is not without risks, and that the patient should be confined to bed, and, if possible, treated in an institution.

Bond[4] reports a case successfully treated with **Ipecacuanha.** The patient was an unmarried woman, twenty-nine years old, who had had epileptic attacks since she was eight. She began treatment in July, 1897. She had for a long time been taking large doses of bromide without benefit. The dose of bromide was reduced to $\frac{1}{3}$ of the former dose, and in addition 10 minims of vinum ipecacuanha were given. This dose was increased from time to time up to 40 drops three times a day. With each increase of the ipecacuanha there was a marked improvement in the patient's condition, and after May 3rd, 1897, the attacks ceased completely.

The reasons which lead to the adoption of this treatment were based, firstly, on observations in private practice as to the value of ipecacuanha in convulsive attacks of children apparently due to gastro-intestinal irritation; and secondly, that it seemed a very excellent remedy to check the voracious appetite and neglect of mastication so frequently observed in epileptics.

Bonnet,[5] as a result of his investigations, finds that urea and the phosphates are not the reason for the toxicity of the urine of epileptics. An exclusive milk diet almost completely suppresses the urinary toxicity, which always appears to be greatest subsequent to attacks. The epileptic poison, he thinks, may be cumulative, and that the attack is a natural discharge for its evacuation. He considers the bromide treatment useless and even harmful, and suggests that possibly the injection of **Artificial Serum** and the administration of powerful purgatives, which also cause diuresis, will be followed by beneficial results. This treatment, if sufficiently prolonged, causes the injured organs to again perform their functions properly, and, moreover, preserves the integrity of the mental functions.

Gorsagi and Coutts,[6] in their excellent article on convulsions in infancy, state that the frequency of such convulsions has been vastly overrated. The immediate danger from a fit has been overrated, while the danger in regard to future neurotic manifestations has been underestimated. Predisposing causes are of much more importance than the exciting causes; slight exciting causes will not cause convulsions except in predisposed infants. In the attack the clothing should be loosened and the child laid on its back, with the head slightly raised. Inhalations of **Chloroform** or of **Amyl Nitrite** may be practised, **Chloral** and **Bromide** injected into the bowel or

a small dose of **Morphine** beneath the skin. Subsequently **Bromides** or **Borax** should be employed systematically.

Spratling[7] believes the early treatment of reflex epileptic phenomena is of great importance. He thinks many cases of nocturnal epilepsy pass unrecognised until far advanced. Out of four hundred and eighty-five persons admitted to the Craig Colony, 83 per cent. had developed the disease before the age of twenty years, and twenty out of a series of one hundred and forty-five had given manifestations of the disease as early as the sixth month of life. The author objects to giving young subjects drugs, the chief action of which is to suppress the convulsive phenomena, for such treatment was not only liable to mask the disease, but experience had shown that it would seriously impair the digestive and assimilative functions. He had yet to see a single case in which the use of bromides had cured the disease, although it had often suppressed the convulsive phenomena for long periods. In his opinion it is wrong to operate upon an epileptic brain after an injury and years of convulsive seizures. The colony plan allowed of the entire and much needed control of all the habits of life of the individual. The diet should be simple and nutritious, and taken in moderate quantity; tobacco might be indulged in moderately, and the whole mode of life should be completely though gradually changed.

REFERENCES.—[1] "Lancet," Oct. 15, 1898; [2] Ibid., Sept. 12, 1898; [3] "Edin. Med. Journ.," Nov. 1898; [4] "Lancet.," Sept. 17, 1898: [5] "New York Med. Journ.," Aug. 27, 1898; [6] "Med. Rec.," Oct. 21, 1899; [7] Ibid., Oct. 28, 1899.

EPISTAXIS.

Synopsis.—(Vol. 1899, p. 265). Avoid plugging posterior nares; **Antiseptic Gauze Plug** in anterior nares. Touching bleeding spot with **Galvano-Cautery** or **Chromic** or **Trichloracetic Acids**. **Hydrogen Peroxide**. Gleason plugs with absorbent wool, soaked in bland oil. ℞ Benzoic Acid, Tannic Acid, Carbolic Acid, āā 1 part, Collodion 20 parts. M. The application. Rendu uses this **Snuff**: ℞ **Antipyrin** 0·05, Tannin 1, Pulv. Sacch. Alb. 10. M. Snuff several times daily. Placing hands and feet in very hot water. Injection of Gelatin.

EPITHELIOMA. (See also "Cancer.")

Synopsis.—(Vol. 1899, p. 266). **Arsenious Acid**, as paint, 1 part in 75 of alcohol and 75 of water, gradually increased to 1 in 100 or 1 in 80.

ERYSIPELAS.

T. Colcott Fox, M.B.

W. Koelzer[1] has tried **Metakresolanytol**, a derivative of ichthyol, in the treatment of an artificial erysipelas in rabbits; the erysipelas was produced by the injection of streptococci and the bacilli of mouse septicæmia. A solution of metakresolanytol was injected locally, and it was also painted on the affected part; and the effect was always to

cure the erysipelas at once, or to mitigate materially its severity. By bacteriological examination it was shown that the metakresolanytol had a very destructive action on the streptococci. The drug has also been employed in several cases of erysipelas in the human subject with very satisfactory results.

When administered internally, **Sodium Benzoate** has a beneficial effect on several infectious diseases which affect the skin, as, for instance, in measles, German measles (rötheln), scarlatina, and it is especially useful in erysipelas. The following prescription is convenient :—

℞	Sod. Benzoatis	parts 2	Sacchar. Alb.	parts 4
	Gum. Acaciæ	,, 3	Aq. destill.	,, 40

A teaspoonful to a tablespoonful (according to the age of the patient) every two hours.

During the febrile stage the drug is taken readily, but later it gives rise to a distaste for it. Sodium benzoate is useful in cases where there is a special predisposition to erysipelas, as it acts as a prophylactic.[2]

Labit[3] recommends that the affected area and beyond be thoroughly painted with a 10 per cent. solution of **Iodol in Collodion.**

Rabinovich[4] has carried out in two hundred cases with marked success the following extraordinary treatment which he learnt from the people in Bulgaria : The affected part is covered with a moistened strip of gauze, and over that is placed a pad of wool soaked in spirit. This is set on fire, and is allowed to burn as long as the patient can bear the pain. Generally he applied the **Cauterisation** three times a day for three consecutive days, and in no case for more than five days. If the erysipelas is very extensive, it is well to apply this method only to the advancing border.

J. L. Audre[5] reports five cases of facial erysipelas satisfactorily treated by **Marmorek's Serum,** but the record is not very convincing.

REFERENCES. – [1] "Deut. med. Woch.," No. 43, 1898 ; [2] "Treatment," quoted from "Medico," No. 35, 1898 ; [3] "Bull. gén. de thérap.," p. 540, 1898 ; [4] "Treatment," quoted from "Vratch," No. 29, 1898 ; [5] "Arch. de méd. et de pharm.," No. 11, p. 340, March, 1898.

ERYTHROMELALGIA (or "Red Neuralgia.") *T. Colcott Fox, M.B.*

This was described by Weir-Mitchell in 1872. Lewin and Benda[1] collected forty-one cases and concluded it was a symptom occurring in various spinal and cerebral maladies. James Collier[2] also showed that it was not a rare symptom of such nervous diseases as disseminated sclerosis, tabes, neurasthenia, and myelitis. Weir-Mitchell and Spiller[3] publish an important case and give a *résumé* of the literature. The pure type is seen in the younger adult, and then pain and

flushing may be absent from the limb when it is in the horizontal position, but when the foot is pendant the arteries throb, the temperature rises, and the redness becomes intense. In old-standing cases and older people the type is aberrant, for the flush and pain are less surely absent from the elevated foot, and the temperature may fall in the pendant foot. The treatment is very unsatisfactory, but Weir-Mitchell cured one case by stretching the posterior tibial nerve and cutting the musculo-cutaneous and the fillets of the external saphenous nerves. In the case now described in a man of sixty-one years there was a high degree of arterio-sclerosis and absence of arterial pulse in the affected leg, perhaps a senile complication. The great toe was amputated, and its nerves were found intensely degenerated. Weir-Mitchell has been inclined of late to attribute the symptoms of erythromelalgia to some form of peripheral neuritis rather than to spinal disease, at any rate in some cases, and such appeared to be the case here. The sensation in the great toe was preserved notwithstanding the striking degeneration of the nerves.

REFERENCES.—[1] "Berlin. klin. Woch.," 1894; [2] "Lancet," Aug. 13, 1898; [3] "Amer. Journ. Med. Sci.," Jan., 1899.

EXOPHTHALMIC GOITRE. (See "Goitre.")

EYE (Local Anæsthesia of). *F. Richardson Cross, M.B., F.R.C.S.*

Bates[1] advocates the use of solution of **Supra-renal Extract** in conjunction with **Cocaine,** for the production of anæsthesia in operations on the eyes. The solution of suprarenal extract should be prepared freshly for each operation by mixing 10 grains of the dried powdered glands with ½ a drachm of water, and filtering. Its action is strongly astringent. To produce anæsthesia, a few drops of the solution of the extract should first be instilled upon the eye, and later cocaine should be used frequently, both before and during the operation. The astringent effect of the extract enables the cocaine to act more effectually, and Bates claims that he has operated on eyes rendered anæsthetic by this method for chalazion and for lachrymal obstruction, and has performed tenotomies, advancements, and even iridectomies for inflammatory glaucoma, without causing the slightest pain in any case.

For the prevention of the pain which comes on after the effects of the cocaine have passed off, he recommends that the closed eye should be douched for fifteen minutes with normal saline solution at a temperature of 115°F. The douche should be used before the effects of the local anæsthetic have passed off, and it is very important that the temperature should be exactly right.

Kyle[2] (of Marion, Indiana) has also had good results from the use of solution of supra-renal extract combined with cocaine, for the production of local anæsthesia.

Hinshelwood[3] has experimented on the local action of **Holocaine** in normal eyes, in inflamed eyes, and for the production of anæsthesia, with a view to operation. He finds that a 1 per cent. solution produces in from eighteen to thirty seconds an anæsthesia equal to that produced by the ordinary solutions of cocaine, without affecting the eye in any other way, the pupil remaining unaltered, and the cornea not becoming dry. It proved useful in facilitating the examination of inflamed eyes, and a satisfactory local anæsthetic in one hundred and fifty-four cases of operation, including cataract extractions, iridectomies, advancements, etc. The solution is an excellent antiseptic, and no toxic effects have been observed from its use.

Randolph[4] finds holocaine a satisfactory local anæsthetic. He inoculated 8 c.c. of a 1 per cent. solution of the drug with five loops of a suspension of staphylococcus pyogenes aureus in a physiological salt solution, and found that a plate culture taken from it at the end of twenty-four hours, contained no colonies, although cultures from a control tube, in which a similar quantity of salt solution had been inoculated with the same amount of suspension of staphylococcus, contained numerous colonies.

REFERENCES.—[1] "New York Med. Journ.," Oct. 16, 1897; [2] "Ophth. Rec.," April, 1898; [3] "Brit. Med. Journ.," Sept. 3, 1898; [4] "Johns Hopkins Med. Bull.," July, 1898; *vide* also "Med. Ann.," 1899, p. 40.

EYEBALL (Foreign Bodies in). *F. Richardson Cross, M.B., F.R.C.S.*

Localisation and Removal of Foreign Bodies in the Eyeball.—Mackenzie Davidson[1] has designed a method of localising foreign bodies in the eyeball or orbit by means of X-rays, which in his hands has given excellent results. This method for the localisation of foreign bodies is a modification of that designed by the same authority, elsewhere in the body, which has already been described in the "Medical Annual," 1899. His description of the principle on which, he works is as follows :—

"Two photographs (or skiagrams) are taken from two different points of view."

"The anode of the Crookes' tube (*i.e.*, the point of origin of the X-rays) is placed vertically at a measured distance from a point where two wires cross each other at right angles. A photographic plate, enclosed in a black envelope as usual, is placed beneath these cross wires. The wires are brushed over with ink, so as to mark the patient's skin. The tube slides along a horizontal bar which is placed

parallel to one of the wires. It is displaced a measured distance to one side and an exposure given, then to a corresponding point on the opposite side, and another exposure given. The result is a negative which shows one image of the cross wires and two images of the foreign body."

"The negative is then placed upon a glass horizontal stage, which may be called the X-ray localiser; a mirror reflects the light from below up through the negative. The adjustments are now repeated, only that a fine silk thread is made to come from the point occupied by the anode of the tube in one exposure on to the shadow of the foreign body it produced, and another thread traces the path of the ray when the tube was displaced to the other position to its corresponding shadow of the foreign body. It follows that the point where the threads cross each other fixes the position of the foreign body in relation to the plate and to the images of the cross wires. These measurements can be applied to the patient's body, as the cross wires left their mark upon the skin."

As the eyeball is very freely movable, and the foreign bodies embedded in it are frequently so small, special precautions have to be taken in dealing with it, and the above method has to be modified in consequence. A plan which gives reliable results is as follows: "The patient sits upright in a chair, the back of his head rests against a board. The side of his head (with the eye to be photographed) rests against two knitting needles which are placed at right angles to each other across a wooden frame. He is made to fix his eyes on a distant object, and a small piece of lead wire is made to touch and mark the lower eyelid at a point which bears a definite relation to some point of the eyeball, such as a scar, etc. The Crookes' tube is arranged to slide horizontally parallel to the horizontal knitting needle. Two skiagrams are taken on the same plate preferably, if possible, or one upon a plate and the other upon a celluloid film, which allows of their being superimposed for localisation purposes, the perpendicular distance of the anode being noted from the point where the knitting needles cross each other, and then the displacement of the tube to either side of this, for each exposure is also recorded.

"When the negative is placed upon the *localiser* ("Med. Annual," 1899, p. 101), we first determine the position of the point of the wire that rested on the lid, and leave a needle with a fine point to indicate this position. We then ascertain the position of the foreign body, and we can thus find out the distance and direction of the foreign body from the mark on the lower eyelid when the eye is placed in

the same position as it occupied when the skiagrams were being taken. It is thus possible to ascertain the position of a foreign body in the eyeball or orbit with considerable accuracy, and also to give its size to within $\frac{1}{25}$ to $\frac{1}{50}$ inch."

"With the anode at 30 cm. from the plate, the exposure for each skiagram (if separate plates be used) need not exceed two minutes, and the total of four minutes' exposure is far within the limits which might produce dermatitis or loss of hair. By the use of osmium anodes the skiagrams can be taken in ninety seconds in adults, or about a minute in children."

Treacher Collins[2] has recorded nine cases showing the clinical value of this method. In seven of these the presence and position of a fragment in the eyeball was correctly diagnosed by Mackenzie Davidson, as shown by the results of operation in six cases, and by examination of the enucleated eyeball in the seventh.

Collins summarises the advantages to be derived from the use of X-rays in ophthalmic surgery as follows :—

(1,) They enable us in doubtful cases to determine the presence or absence of a metallic foreign body in the eye. With a good apparatus properly used, a piece of metal less than a millimètre in diameter can be detected in a skiagraph.

(2,) The exact position in the eye of a foreign body can by Dr. Mackenzie Davidson's method be located; this allows the procedure which will most easily facilitate its removal to be deliberately planned; so that a minimum amount of disturbance of the tissues of the eye is brought about.

(3,) The same method allows the exact size of an invisible foreign body to be ascertained, and the size of the incision necessary for its removal to be determined.

(4,) Dr. Mackenzie Davidson's localisation method enables us to say whether or not a foreign body which has entered the eye has passed through it into the orbital tissues, or remained in the eye, a point sometimes left as the result of clinical examination—a matter of considerable uncertainty. For example, it is by no means uncommon for a foreign body entering the front part of the eye to pass through the vitreous, strike the retina, and rebound back into the anterior and lower part of the vitreous.

Other cases in which Mackenzie Davidson correctly diagnosed by means of skiagraphs the position of foreign bodies in the eyeball or orbit, have been published by Cargill, Morton, Clarke, Snell, and Wray.

Jameson Evans[3] gives results of thirty-four cases in which the

electro-magnet was employed in the Birmingham and Midland Eye Hospital, for the removal of foreign bodies from the eyeball. In eighteen cases the fragment was successfully extracted ; ten of these retained good vision ; in three, the shape and appearance of the eye was preserved, but vision was very defective owing to detachment of the retina; and in four the eye was subsequently enucleated (for suppuration, two; recurrent vitreous hæmorrhage, one ; pain and lowered tension, one). In the remaining case the eye became painful and soft, but the patient refused to have it removed.

Three of the sixteen eyes from which no foreign body was removed by the electro-magnet, were subsequently enucleated, and in each of them a fragment was found. Of the remaining thirteen eyes which were saved, six retained good vision, three had traumatic cataract, and would probably have been improved by operation, while in four the eye was saved, with but little vision.

In considering why the electro-magnet often fails to extract the foreign body presumed to be in the eye, Evans concludes that in some no foreign body has been present at all. Such an error of diagnosis is unlikely to take place after use of Röntgen's apparatus or of the Sideroscope. In a certain number of cases where the foreign body has been undoubtedly firmly imbedded in the coats of the eye, and could not be shifted by an ordinary electro-magnet, the large one used by Haab would be specially valuable. More accurate localisation would help to reduce the number of failures, as the magnet could then be passed towards the exact position of the fragment at once, and there would be less likelihood of the object being missed or of its failing to become attached when surrounded by lymph or blood, and the surgeon would minimise that disturbance of the vitreous and other structures of the eye which proves so detrimental. Skiagraphy employed on the lines laid down by Mr. Mackenzie Davidson has proved a most accurate localising agent, and promises to supersede all other methods.

REFERENCES.—[1] "Trans. Ophth. Soc.," vol. xviii, p. 200 ; [2] "Brit. Med. Journ.," Aug. 20, 1898 ; [3] "Lancet," Aug. 27, 1898.

EYEBALL (Removal of). *F. Richardson Cross, M.B., F.R.C.S.*

An exhaustive report[1] has been published by a committee of the Ophthalmological Society, upon the value of simple excision of the eyeball, and the operations which have been substituted for it, viz., excision with the insertion of a globe into Tenon's capsule; evisceration with or without insertion of a globe into the emptied sclerotic ; abscission and optico-ciliary neurotomy, and neurectomy. These operations are almost entirely free from risk. A very few cases are

recorded in which fatal meningitis followed simple excision, and there are also a few in which sympathetic ophthalmitis appears to have been set up by abscission of the cornea. With the exception of optico-ciliary neurotomy and neurectomy, these operations all cause a deformity, necessitating the wearing of an artificial eye. After simple excision this deformity is more marked, owing to the defective prominence and imperfect movement of the artificial eye, but the operation is simpler, the recovery more rapid and painless, and the protection against the occurrence of sympathetic ophthalmia or the recurrence of a tumour more complete than after its substitutes.

After evisceration with insertion of an artificial vitreous into the emptied sclerotic (Mules' operation), excision with insertion of a globe into Tenon's capsule (Frost), and abscission, the sunken appearance of the artificial eye which is present after simple excision is avoided, the normal relation of the lids and eyeball is closely simulated, and thereby the surface of the artificial eye is kept clean and bright, the accumulation of secretion in the conjunctival sac is avoided, and the range of movement of the artificial eye is increased. On the other hand, there is always a chance that the globe will not be retained in the sclerotic or in Tenon's capsule, while abscission may set up sympathetic ophthalmia. Optico-ciliary neurotomy and neurectomy are unreliable both as means for the relief of pain and for the prevention of sympathetic trouble.

The nature of the disease in the eye will largely influence the choice of operation. In intra-ocular malignant growths, excision with removal of as much of the optic nerve as possible, is always indicated. In wounds likely to cause sympathetic ophthalmia, Mules' operation (if care be taken to remove the entire uveal tract, and if it be performed within three weeks of the injury) probably affords as great an immunity as can be obtained by excision, but after a longer interval, or if sympathetic mischief has already developed, excision should be preferred. Cases of anterior staphyloma are those best suited for Mules' operation, while for painful blind glaucomatous eyeballs optico-ciliary neurotomy or neurectomy, or Mules' operation may be chosen. In acute panophthalmitis, excision gives the most rapid relief of pain, but it is doubtful if it is as free from risk of cerebral meningitis as evisceration.

The age, social position, and occupation of the patient must also be considered in deciding upon the operation to be performed.

The writer is of opinion that in all cases of recent injury calling for removal of the eyeball or its contents, the patient should be allowed to choose which operation he prefers, after it has been clearly ex-

plained to him that while Mules' operation will probably give a better cosmetic result, the convalescence after it will be more prolonged and painful than after simple excision, and that when Mules' operation is performed, there is always a possibility that the ball may come away either within a few days from non-union of the sclerotic, or later from formation of a fistulous track, or that it may cause neuralgia even after several years have elapsed; but that the ultimate result will in no case be worse than if the eyeball had been originally excised; but where suppurative inflammation has set in or a tendency to sympathetic ophthalmitis seems probable, evisceration without the introduction of an artificial vitreous or excision of the eyeball, is preferable according to circumstances.

New Methods of Operation.—H. Schmitt[2] has endeavoured lately to obtain a firm connection between the recti tendons and conjunctiva after enucleation of an eyeball, by suturing the tendons to slits in the conjunctiva. His object in doing so is to obtain greater motility in the artificial eye, and to diminish the extent to which it sinks.

Priestley Smith[3] has modified this method, and operates as follows: Immediately after the speculum is introduced, the eye is rotated outwards, and a narrow horizontal fold of conjunctiva over the internal rectus, along with the subjacent connective tissue and muscle, is picked up and transfixed with a silk thread, which is firmly tied. The other recti are similarly treated, and the enucleation is completed in the usual way, care being taken not to cut the sutures when dividing the tendons. These sutures do not increase the discomfort of the patient nor delay the healing of the socket, and they appear to improve the appearance of the patient after the operation.

D. C. Bryant[4] (Omaha), after using an artificial vitreous made of aluminium instead of glass, for insertion into the sclerotic after evisceration, or into Tenon's capsule after enucleation, on account of the greater strength and lightness of the metal, has had the back and sides of the ball fenestrated, in the hope that the frame so formed would fill up with granulation tissue, which would diminish the risk of its extrusion. He states that his experiments on dogs show that while there is some drawing in of surrounding structures, the main part of such a cavity becomes filled with new tissue.

He has used the ball in four, and a frame in sixteen cases—three-fourths of them enucleations. In the cases of enucleation, the recovery was rapid without any complications or undue reaction, but in the eviscerations the healing process was prolonged. In no case

was there after trouble, tenderness, or irritation of the stump, and each patient wore an artificial eye with perfect comfort.

REFERENCES.—[1] "Trans. Ophth. Soc.," 1898; [2] "Klin. Monats f. Augenhk.," Nov., 1897; [3] "Ophth. Rev.," May, 1899; [4] "Journ. Amer. Med. Assoc.," 1898; "Ophth. Rev.," Dec., 1898.

EYELIDS (Diseases of). *F. Richardson Cross, M.B., F.R.C.S.*

Trachoma.—Snydacker[1] has examined the tissues and conjunctival secretion in cases of trachoma for micro-organisms, and has isolated in both a diplococcus which he believes to be pathogenic for the disease. He examined the tissues by squeezing out the contents of the nodules and making smear preparations of them, and by excising nodules, hardening and embedding them, and then staining very thin sections with Loeffler's methylene blue or by the Gram Weigert method. In all the sections he found capsulated diplococci 1·5 to 2μ in length, by ·5 to ·6μ in width, situated chiefly in the adenoid tissue of the mucous membrane, but occurring also in leucocytes and in epithelial cells. They were present in the secretions in recent untreated cases, but not when the disease was of old standing.

These diplococci stain well with aniline dyes and by Gram's method; the capsules do not stain, but the septa between the cocci show an affinity for methylene blue. The organism is a facultative aërobe. Cultures of it which are obtained with difficulty, live for months in agar, but die in bouillon in about two weeks. They grow rapidly in an incubator, more slowly at the temperature of a room, and at the end of a week develop a urinous odour. Inoculations on animals gave negative results, but a characteristic attack of trachoma was produced in a blind woman by rubbing some of a culture of the organism into her conjunctiva, and typical diplococci were found in nodules excised from her lids.

Snydacker next obtained a toxin of the bacillus, and having found that it produced a reaction both in animals and in a man, as shown by pyrexia, malaise, etc., he endeavoured to procure an antitoxin by means of a guinea-pig. The animal was treated with gradually increasing injections of the toxin, until at the end of seven weeks it was found to be able to stand a dose which was rapidly fatal to a non-imunised animal. A third animal was treated with an intra-peritoneal injection of serum from the immune animal, and afterwards given a lethal dose of the toxin with the result that it had a severe attack of pyrexia and diarrhœa, lasting several weeks, but ultimately recovered. The immune animal was then killed, its blood was drawn off and allowed to clot in a cool place, and about ½ an ounce of the serum with 5 per cent. of carbolic acid added to it was placed in a sterilised

bottle, for use as an antitoxin. Injections with this serum were made in the right eyes of two patients suffering from trachoma, and appeared to have a specific effect upon the diseased tissue; but the results were not superior to those obtained in the other eyes of the same patients which were treated in the ordinary manner. Snydacker has given himself much painstaking labour, and hopes to obtain a more efficient antitoxin in the future, but it seems probable that the treatment of trachoma will still remain local.

Sweet[2] (Philadelphia) describes a new method of using **Jequirity** for the treatment of trachoma. Instead of endeavouring to produce a violent purulent inflammation by one or two applications of a strong infusion of the seeds, he tries by repeated use of solutions of gradually increasing strength, to obtain the specific effect of the drug without causing suppuration. He commences with an infusion containing 2 grains of decorticated jequirity seeds in an ounce of water, which he applies to the everted lids with a cotton mop, and he repeats the application on every second or third day, the strength of the infusion being increased on each occasion by 1 grain to the ounce.

As soon as the discharge becomes purulent, the treatment is discontinued for three or four days, after which time the application is resumed at the strength at which it was left off, when a continuing increase of strength will be borne without setting up suppuration. Sweet has reached an infusion as strong as 20 grains to the ounce without causing serious inflammatory symptoms, and states that in all his cases, except one which was complicated by corneal ulcers, the granulations almost disappeared, and the pannus became much thinner. One man who was so blind that he had to be led to the clinic, was able after two months' treatment to read large print.

Gilfillan[3] divides trachoma clinically into three classes: (1,) Mild cases where only the lower lids are involved; (2,) Ordinary cases where both lids are involved; (3,) Chronic cases where the granules have broken down, leaving the conjunctiva red, velvety and succulent. Almost half of his patients belong to the first class, and are easily cured by instilling into each eye night and morning 6 drops of a solution containing 1 drachm of **Tannic Acid** in 1 ounce of **Glycerin.** The remainder are treated with applications of **Sulphate of Copper** three times weekly, replaced occasionally by **Alum Crystal.** When necessary, Knapp's roller forceps are used. In addition, the lids are painted twice daily with a 1 in 6,000 solution of **Perchloride of Mercury.**

Ebersen[4] recommends **Ichthyol** for the treatment of trachoma and catarrhal conjunctivitis, and claims that it is a powerful remedy for

clearing up old corneal scars. He uses the drug in a 30 to 50 per cent. aqueous solution, with the addition of a little glycerin, or in a 5 per cent. ointment.

Blepharitis.—Moulton[5] has found blepharitis which had resisted all the ordinary methods of treatment, yield to applications of **Formalin.** The edges of the lids are rubbed gently with a cotton-wool mop, dipped in a solution of the drug varying in strength from 0·2 to 1 per cent., until all scales and crusts are removed. The applications are repeated daily until a cure is effected. Care must be taken to prevent the solution from touching the surface of the eyeball.

Entropion.—For the treatment of entropion, Querenghi[6] recommends **Cauterisation** of the eyelid. He says that the application should be made on the cutaneous surface in a line 4 mm. from the ciliary margin, and should be sufficiently severe to pass through the skin and orbicular muscle, and to score the anterior surface of the tarsal cartilage, and that on opening the eye immediately after the operation, the position of the lid should be perfect. He recommends that care should be taken to keep the edges of the wound in good apposition after the eschar comes away, and says that healing is usually complete at the end of a week.

REFERENCES.—[1] "Journ. Amer. Med. Assoc.," 1899, vol. xxxii, pp. 209 and 977 ; [2] 'Therap. Gaz.," March 15, 1899 ; [3] Ibid., Jan. 10, 1899 ; [4] "Klin. Therap. Woch.," 1898, No. 18 ; [5] "Journ. Amer. Med. Assoc.," Sept. 17, 1898 ; [6] "Annales d'oculistique," Oct., 1898.

EYE-SOCKET (Plastic Operation for).

F. Richardson Cross, M.B., F.R.C.S.

The writer recommends the following plastic operation for contracted eye-socket as illustrated in *Plate XII*, and which he has frequently performed with success.

Fig. A shows the palpebral aperture opened to its full extent, and showing the whole conjunctival sac before operation ; *Fig. B*, the position of the flap removed from the upper lid ; and *Fig. C*, the position of the transplanted flap within the orbit and its attachment to the separated conjunctival layer.

The steps of the operation are as follows :—

(1,) The external canthus is slit.

(2,) A flap of skin is cut horizontally from the upper lid, with a base left attached close to the external canthus (*Fig. B*).

(3,) A horizontal incision is made through the conjunctiva from the inner to the outer canthus, going deeply into the sub-conjunctival tissue, which is always contracted and fibrous.

(4,) The cut edges of the conjunctiva are freely dissected apart,

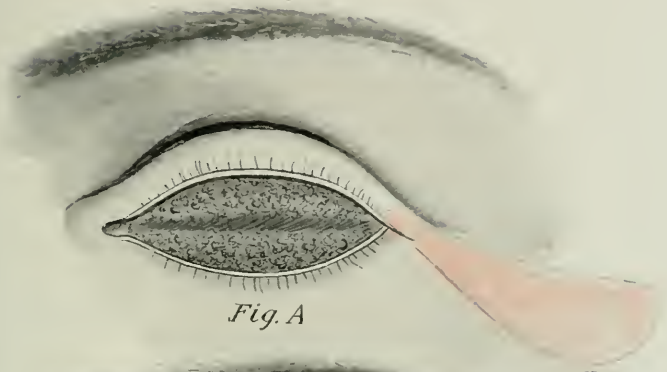

Fig. A

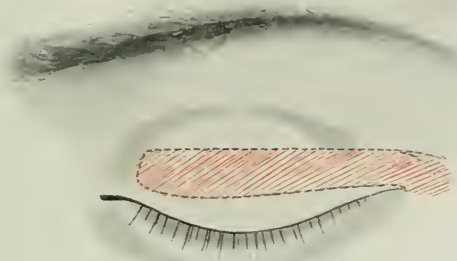

Fig. B

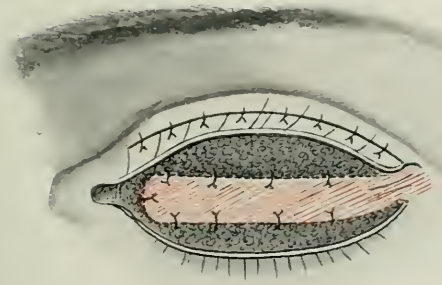

Fig C

Plastic operation for the Eye-socket.

thus separating the upper from the lower lid, and making as large a raw surface as possible between them in the depth of the orbit.

(5,) The flap of skin with its raw surface downwards is pushed into the orbit between the lids, and the edges of the conjunctiva lining the upper and lower lids are carefully sutured to its margins (*Fig. C*).

(6,) The wound in the upper lid is brought together by sutures on the external surface (*Fig. C*).

In very aggravated cases, where the skin flap required is so large that, if taken from the upper lid, it might give rise to ectropion, it may be dissected from the temple, with a pedicle left attached to the outer part of the upper lid (*Fig. A, X*), the wound on the temple being subsequently brought together with sutures of silver wire and catgut.

Excellent results have been obtained by the latter method, but the flap for a long time remains thick, and retains the characteristics of skin, while the scar on the temple is disfiguring, particularly in the case of girls or young women, who would seem to be specially liable to contraction of the eye-socket. On the other hand, the skin when removed from the upper lid seems rapidly to assume the appearances of mucous membrane, and the position of the wound is scarcely recognisable.

REFERENCES.—"Trans. Ophth. Soc.," vol. xviii., p. 230; vol. xix, p. 247.

EYES (Artificial). *F. Richardson Cross, M.B., F.R.C.S.*

The artificial eyes ordinarily made are most suitable for use over a blind unsightly eye, or after Mules' operation. When used after enucleation of the eyeball, the hollow posterior surface of the prothesis affords a space in which tears and mucus accumulate, while its thin edges are apt to wound the conjunctival sac. To overcome this difficulty Snellen[1] has had two new forms of artificial eyes made by Muller, of Wiesbaden. The first (*Fig. 4*) is a double-walled shell for cases where a small stump remains, as after a simple evisceration, while the other (*Fig. 5*) is an artificial globe for use when the conjunctival sac is emptied and spacious.

Fig. 4.

Fig. 5

REFERENCE.—[1] "Ophth. Rev.," Dec., 1898.

FIBRINOUS RHINITIS. (See "Nose.")

FIBROMYOMA.

Synopsis.—(Vol. 1899, p. 281.) Thyroid Extract, Iodide of Potassium, Ergot (5j t.i.d.) and Electricity, have been advocated for fibromyomata of ovary and uterus.

FILARIA. *James Cantlie, F.R.C.S.*

The filariæ sanguinis hominis of Lewis has been re-named by Manson the filaria nocturna, owing to the discovery of several other filaria, of which the filaria diurna and the filaria perstans are the better known. The names indicate the nocturnal, the diurnal, and the "constant" appearance in the blood of these organisms. In addition to these, Dr. Manson[1] describes a small, naked worm, met with in blood of patients in St. Vincent, West Indies, and termed Filaria Demarquaii. Concerning this worm, however, Dr. Galgey[2] states that he also met with the parasite in the blood of patients of St. Lucia, West Indies. Dr. Ozzard, Demerara, describes two filarial worms which Manson has named the sharp and blunt-tailed filariæ Ozzardi. Concerning these two parasites, Dr. C. W. Daniels[3] describes what he believes to be the parental forms of the blunt-tailed and sharp-tailed filariæ Ozzardi respectively.

Filarial Periodicity.—Dr. Manson[4] states that filariæ nocturna appear in the peripheral circulation in countless swarms during the night, and disappear from it during the day. This phenomenon coincides with the habits of the mosquito—the intermediate host of the parasite. Filarial periodicity is constant; when the hours of sleep are inverted, the appearance of the filaria in the peripheral blood is also inverted. The filarial embryoes during the day seek shelter chiefly in the vessels of the pulmonary circulation, in the lungs, and in the large arteries at the root of the neck. Dr. Manson also calls attention to the similarity of periodicity in malaria and filaria, and also to the fact that certain varieties of the malarial parasite, whilst the young forms are readily obtainable in the finger blood, the mature forms are almost entirely confined to the capillaries of the deeper viscera.

Guinea worm (Filaria medinensis, Drucunculus medinensis) and its habits is dealt with by Major A. Harrington, I.M.S.[5] From observation of some two hundred cases, Major Harrington is of opinion that the parasite does not enter the system by the drinking water, but gains access through the skin. In 75 to 80 per cent. the parasite occurs below the knee, no doubt owing to the fact that the lower limbs are exposed, as in wading and washing in pools, etc., containing guinea-worm embryoes. In other instances, where they occur in

the head, back, or groin, etc., Major Harrington was able to show a local infection. Thus, when the parasite enters the scalp, he traced the source to carrying infected water in an earthenware pot on the head ; in the case of the back being attacked, it was found to occur chiefly amongst water-carriers, from bearing their leather water-bags on their backs, etc. Dr. Carter long ago contested that it was the matured and impregnated female animal that penetrated the skin and gave no sign of her presence until near full gestation.

Sleeping Sickness and Filaria Perstans.—Dr. Manson[6] describes in detail the signs and symptoms of sleeping sickness as observed in two cases of the disease brought from the Congo to Charing Cross Hospital, London. The disease is confined, as far as at present known, to that part of West Africa which lies between the Senegal to the north, and Loanda to the north along some 1,500 miles of latitude, and as far inland as Stanley Pool. The presence of filaria perstans in the blood of these patients serves to establish the conclusion that the worm is an etiological factor in the disease.

Dr Manson adduces a working hypothesis from a study of these cases : (1,) That the germ of sleeping sickness operates primarily on the encephalon ; (2,) That this germ is possibly filaria perstans ; (3,) That the parasite in its wanderings, either by entering the brain, or by interfering more or less directly with its nutrition, may gradually bring about a cessation of its function, ultimately leading to secondary neuro-muscular malnutrition and symptoms of sleeping sickness.

REFERENCES.—[1] "Brit. Med. Journ.," Dec. 25, 1898 ; [2] Ibid., Jan. 21, 1899 ; [3] Ibid., April 16, 1898, and Jan. 17, 1899 ; [4] Ibid., Sept. 9, 1899 ; [5] Ibid., Jan. 21, 1899 ; [6] "Journ. Trop. Med.," Dec. 1898.

FURUNCULOSIS. *T. Colcott Fox, M.B.*

L. Brocq,[1] of Paris, extols the efficacy of fresh brewer's **Yeast** (or pastrycook's yeast) in furunculosis. In a note on the history of this treatment he refers to a letter of Mr. Mosse in the "Lancet" for 1852, and to a letter of Debouzy in 1894, showing that the remedy was in popular use in parts of France. Certainly Sir James Paget recommended yeast many years ago, and we can assure M. Brocq that its use has never entirely died out in England. Brocq gives a teaspoonful thrice daily at the commencement of a meal. The daily dose, however, will vary from 3 to 9 teaspoonfuls, according to the tolerance of the subject and the necessities of the case. The medium in which it is given may be a claret-glass of water, alkaline mineral water, or beer. He thinks it has a remarkable effect in certain persons in checking suppuration and preventing the succession of boils and other suppurative lesions.

Stoner,[2] who recognises that so-called furunculosis is due to the invasion through the skin of the staphylococcus pyogenes aureus, and sometimes albus or citreus, and is only a constitutional disorder in the sense that disordered metabolism may make a favourable soil, holds that the treatment should consist in the liberal application of antiseptics (1 to 500 **Bichloride of Mercury Solution** is the best), to be mopped twice daily upon the broken skin about the furuncles. The abscess cavity should be irrigated with a weak bichloride solution. The poultice is condemned unconditionally, and in its old form of application rightly so, but, surely, if made with antiseptics or parasiticides and the skin disinfected, it is a good application, like boric acid fomentations.

Casper Stock[3] claims a marked abortive action in the early stage for **Tincture of Iodine,** and at a later stage a hastening of suppuration. This was the wonderful double influence claimed for sulphide of calcium.

Zangger[4] has employed with success **Salzwedel's Alcoholic Dressings** for furunculosis and sycosis, and for other conditions. He lays much stress on the mode of application. The part should be washed and dried, and covered with gauze to prevent the adhesion of the cotton-wool; then a layer of cotton-wool, $\frac{1}{2}$ inch to $\frac{3}{4}$ inch thick, is fastened to the part by a gauze bandage; then the dressing is saturated with alcohol—the spiritus rectificatus of the British Pharmacopœia will do; over this is laid a cover of gutta-percha paper, and fastened by a gauze bandage. The gutta-percha paper must be perforated by small holes at distances of one inch, and it should extend one inch beyond the dressing on every side. A. Lanz[5] also spoke well of this treatment.

Philippson[6] says: "The three most useful agents for inhibiting the growth of the staphylococci, which are the cause of boils, are **Alcohol, Benzoic Acid,** and **Salicylic Acid.** When fully developed a boil should be covered with a plaster containing 50 per cent. salicylic acid, which should be renewed three or four times a day in order to remove the discharge. Maceration takes place and the necrobiotic process is hastened so that the loosened core can generally be squeezed out after twenty-four hours' treatment. Rapid healing then follows under the salicylic plaster. The same treatment should be applied to carbuncles, though it is well to increase the activity of the plaster by covering it with linseed-meal poultices. Multiple and deep punctures with the thermo-cautery often shortens the process, and if the carbuncle is spreading deep incisions over the infiltrated margin are necessary. Boils on the face are very liable to lead to septicæmia.

They should be punctured with the galvano-cautery, the resulting slough removed with the sharp spoon, the cavity filled with powdered salicylic acid, and the whole covered with the salicylic plaster. For small furuncles, before they are fully developed, sponging three times a day with cotton-wool soaked in alcohol, or in a solution of benzoic or 2 per cent. salicylic acid in alcohol, is sufficient. The inflamed parts should not be touched with water or soap. Thus, in general furunculosis, baths must be avoided, since everything which macerates the skin adds to the chance of the organisms penetrating it. For disseminated furuncles a convenient method of treatment is inunctions twice a day of a 2 per cent. salicylic acid ointment, which should be continued for eight days after the appearance of the last boil. In children the application of a 50 per cent. salicylic acid plaster to large surfaces, such as the back or buttocks, causes the disappearance not only of the tone furuncles and carbuncles, but of the deep subcutaneous abscesses which so frequently accompany them, and which usually require opening. It is of importance to discover the constitutional cause of the furuncles and to treat it appropriately."

The reporter does not agree with some of Philippson's remarks, for he has repeatedly seen the happiest results in infants covered with boils and abscesses from using parasiticide and disinfectant baths as an adjunct to the treatment.

Friedjung[7] groups the furuncular lesions seen in nurslings under three heads: (1,) Sub-epidermic abscess; (2,) Furuncles properly so-called; (3,) Abscess of the subcutaneous tissue developing almost without inflammatory reaction. In an editorial in the "Archives of Pediatrics," Sept., 1899, the writer discusses the occurrence of furuncles in nurslings, and rightly states that they may occur by crops in scores and even hundreds. The writer observes that the characteristic "core" rarely forms, but the lesions assume more the type of an ordinary abscess. Prevention of re-infection by the pus is the most important element in the management. The greatest possible surgical cleanliness should be observed. Each boil should be incised as soon as it points and the contents gently squeezed out, and the cavity washed with a solution of bichloride of mercury or a saturated solution of boric acid.

REFERENCES.—[1] "Presse méd.," Jan. 28, 1899; [2] "Med. News," Jan., 1899; [3] "Phil. Med. Journ.," p. 798, April 15, 1899; [4] "Lancet," p. 222, Jan. 28, 1899; [5] "Med. Obs.," Jan., 1898; [6] Quoted in "Med. Rev. of Reviews" from "Therap. Berl. der Deut. med. Woch.," p. 31, May 4, 1899; [7] "Arch. f. Kinderh," 1899.

GALL-BLADDER and BILE-DUCTS (Croupous Inflammation of).

Prof. A. W. Mayo Robson, F.R.C.S.

It had been noticed as far back as 1820, by Dr. Richard Powell,[1] that membranous or croupous enteritis was frequently associated with attacks simulating gall-stone seizures. Mr. Jonathan Hutchinson, in his "Archives of Surgery," in commenting on this paper, suggests that in some of these cases a *bonâ fide* attack of gall-stone colic may have been the cause of the membranous enteritis.

From a number of cases that I have seen and observed, some of them having been submitted to operation without gall-stones having been found, but where there was abundant evidence of inflammation of the gall-bladder and bile-ducts, I have formed the opinion that the cause of the painful attacks, followed by slight jaundice in these cases of membranous enteritis, is the formation of membrane in the bile passages, which partly obstructing the bile flow, sets up spasms of the gall-bladder, just as a gall-stone or even a lump of tenacious mucus will do, as shown in the cases mentioned in the chapter on Chronic Catarrh of the Gall-Bladder, in my work on "Diseases of the Gall-Bladder and Bile-Ducts" (2nd edition), where operation was undertaken for, and led to the cure of attacks of pain dependent on chronic catarrhal cholecystitis.

Owing to the disintegrating effect of the bile and the intestinal secretion, it seldom happens that a true cast of the gall-bladder or bile-ducts is discovered, as in the following case, related by Dr. Clennell Fenwick,[2] of Christchurch, New Zealand, concerning a patient he had seen with Dr. Britten: A.B., aged twenty-nine, has had nine attacks of biliary colic in the last fourteen months, accompanied by more or less severe jaundice. During the first two attacks he passed on each occasion a fairly large facetted gall-stone. The fæces had not been examined during the later illnesses, but from the severe pain and the symptoms exactly resembling his earlier attacks, he feels sure that he has passed a stone on each occasion.

Fourteen days ago he had a severe colic, necessitating the use of morphia, and next day passed a "large piece of flesh," which was examined by his doctor, who describes it as an oblong sac with moderately thick walls, stained green, about 2 inches long, and 1 inch broad, resembling the gall-bladder in shape. Ten days later he was again seized with severe pain, similar to that experienced in all the former illnesses, and after some hours of agony he was relieved, and next day passed another cast, which I examined. It is 2 inches long, $1\frac{1}{2}$ inch in breadth; its walls are $\frac{1}{10}$ inch thick; it is a closed sac, with a distinct neck, and is stained bright green in parts, especially towards

the neck. When laid out it appears to resemble a gall-bladder. The accompanying fæces were clay-coloured, and had been so for a long period of time. There was no microscopic appearance of hydatid structure, and I do not think that it was an intestinal cast. We came to the conclusion that both the casts were derived from the gall-bladder, as the patient had suffered from typical biliary colic many times before, and described the pain experienced before the passage of the casts as exactly similar to that he had felt before he passed the gall-stones.

It seems not improbable that the presence of the stones has set up a chronic inflammation in the bladder, which has resulted in the formation of a false membrane, which has itself been expelled after the last stone had been passed.

Dr. Powell, in the paper referred to, describes the symptoms as follows: "The more violent seizures, under which I saw all the patients, consisted in a sudden and excessive pain in the epigastric region, coming on in paroxysms very frequently repeated, rather relieved by the pressure of the patient herself at the time, but leaving great soreness and tenderness during the intervals. This state continued for about four days, and during the attack the stomach was very irritable, and the tongue coated and clammy. Jaundice came on at an early period, and the stools were white, brown, and somewhat greenish, and streaked in colours until the films began to pass, when they were mixed with a full quantity of bile, but not at first of a healthy colour."

Dr. Powell further remarks: "The formation of adventitious membrane has not been so frequently observed in the intestinal canal as it has in circumscribed cavities, and I know not that any description of the symptoms accompanying such a state has heretofore been given. The appearance which comes nearest to it, both in resemblance and situation, is the membrane formed in the trachea under croup, but the symptoms are there more violent and destructive from locality of situation.

"Whenever violent pain takes place in the epigastric region of the abdomen, exacerbating in paroxysms, accompanied by sickness, yellowness of the eyes, skin, and urine, by clay-coloured fæces, and without any proportionate increase of action in the circulation, biliary concretions are supposed to be forcing their way through the ducts, and when these symptoms abate, it is inferred that their passage into the duodenum has been effected."

After this, Dr. Powell proceeds to state that he has often been disappointed in not finding a gall-stone in the fæces, and has found instead what he proceeds to describe :—

"In the cases to which I refer, this residue has exhibited a large quantity of flakes, mostly torn into irregular shapes and appearing to have formed parts of an extensive adventitious membrane of no great tenacity or firmness. In the first of the cases which came under my notice, this membrane was passed in perfect tubes, some of them full half a yard in length and certainly sufficient in quantity to have lined the whole intestinal canal. In the others, also, the aggregate quantity has been very large, and it has continued to come away for many days, but it has been in irregular, thin flakes of not more than two inches extent, and not, so far as I could discover, of the perfect tubular form (which would probably also have been broken down by the agitation in water, if it had existed on its first passage out of the body).

I have definitely examined four such cases, in all of whom the leading symptoms have been similar, and these have led me to suspect the passage of biliary concretions at the time. They have all been adult females, and have occurred in private practice. I had attended but one of these previous to this particular attack, and she had frequently suffered from occasional pain in the intestines, and derangement of her powers of digestion, with flatulence and a sense of suffocation. She was always relieved at the time by mild, opening medicine, and believed herself able to prevent the attacks."

It is, of course, possible to have membranous enteritis and colitis, without the bile channels participating, but when the combination of symptoms previously mentioned does occur, there can be little doubt that the bile passages have become involved in the inflammatory process, and under these circumstances the symptoms will demand treatment.

Diagnosis.—As the symptoms so exactly resemble gall-stone attacks, the disease can only be differentiated by an examination of the evacuations, when the discovery of membranous intestinal casts will raise the suspicion of croupous cholecystitis or choledochitis. Should a cast of the gall-bladder be discovered, the diagnosis will be rendered certain, but in the absence of such positive evidence, the possibility of gall-stones being also present will be entertained.

In one case, the patient, a man, aged thirty-six, had suffered from attacks of paroxysmal pain in the upper abdomen, which exactly simulated ordinary biliary colic. No gall-stones had been found in the motions, but for some time before operation membranous casts had been found in the stools after his attacks of colic. When examined, no tumour could be made out, but the right rectus was rigid in its upper half. At the operation no gall-stones were found, but there were adhesions of the gall-bladder to the omentum, duode-

num, and colon, which, in association with the catarrh of the bile passages, was quite sufficient to account for the attacks simulating gall-stones. The patient was cured by cholecystotomy, and remains quite well.

Another case was of a somewhat similar character, but in it there was associated cholelithiasis. The patient was a lady, aged forty-seven, and her first attack of gall-stone colic had occurred about two years before operation. Similar seizures took place frequently, gradually increasing in intensity and lasting longer. Towards the end of her illness membranous casts were found in the motions.

On examination, there was the usual local tenderness, and the gall-bladder could be felt to be slightly enlarged. At the operation there were found seventy-eight stones in the gall-bladder, cystic, and common ducts, and numerous adhesions. Cholecystotomy, with drainage of the gall-bladder for a fortnight, led to a complete cessation of the attacks, which have not recurred.

TREATMENT.—If, under treatment by saline aperients such as Carlsbad salts, given the first thing in the morning, and careful dieting, the symptoms do not abate, the question of drainage of the gall-bladder by cholecystotomy will be well worth considering, and at the time of operation adhesions of the gall-bladder to the neighbouring viscera, which will probably be found, should be broken down.

In both cases referred to, operation was followed by marked relief, and by entire cessation of the attacks resembling cholelithic seizures. Though in the first case, after a year and a half, there was a repetition of intestinal colic, followed by the passage of some membrane in the fæces, the attacks coming on as a result of exposure to cold and wet, along with irregularities in diet, it is interesting to note that with the intestinal colic there was none of the old biliary colic.

REFERENCES.—[1] "Med. Transact. of the College of Physicians"; [2] "Brit. Med. Journ.," April 23, 1898, p. 1072.

GALL STONES. *Priestley Leech, M.D., F.R.C.S.*

Delagénière[1] of Le Mans believes that cholecystotomy, as usually performed, is open to numerous objections. He exposes the gall-bladder thoroughly, and raises the edge of the liver as high as possible with a retractor. The peritoneum is guarded with a compress or sponge, and the fundus of the gall-bladder is opened; this incision is enlarged with scissors along the left aspect of the gall-bladder till the calculi to be removed are reached. Kocher's forceps placed on either side of the incision help to draw the deeper parts forward. The duct may be cut open almost to its termination in a bad case. In certain instances a large calculus in the lower part of the duct must be cut

upon directly or through the duodenum. After the calculi are extracted Delagénière closes the long incision in the duct and gall bladder with a running suture of very fine silk, an interrupted suture being placed after every third point of entry of the long suture. To establish a biliary fistula about half-an-inch of the incision in the fundus of the gall-bladder is left unsutured, the gall-bladder is drawn forwards and the peritoneum sewn round it a little below the incision. A hole is next made in the right rectus muscle and the free piece of the gall-bladder drawn into it, the edges of the opening in the bladder being sewn to the edges of the hole in the muscle; a hole is made in the skin over this hole in the muscle and a drainage tube passed through into the gall-bladder. The abdominal incision is closed; in about ten days the fistula may be sewn up, the wound in the bladder and duct being healed. (This is a too severe operation for simple cases.)

Kehr, Eilers and Lucke[2] have prepared a solid monograph founded on one hundred and ninety-seven operations by Kehr for gall stones; it is a continuation of Kehr's article in "Volkmann's Vorträge." He reports two hundred and two operations within the last three years, with a mortality of thirty-two (16 per cent.). In the two hundred and six which he operated on within six years previously, seventeen died (8 per cent.), but the recent operations were undertaken on grave cases which he would not have dared to touch earlier on. The two hundred and two recent operations are divided as follows: (*a*,) Conservative operations on the gall-bladder—sixty-eight with three deaths; (*b*,) Cholecystectomy—fifty-nine with two deaths; (*c*,) Choledochotomy and drainage of hepatic duct—thirty-two operations with four deaths (one, pneumonia third day; one, a few days after operation (liver cirrhotic); one on second day from embolism of pulmonary artery; one where gastro-enterostomy was performed as well died on eighth day of hæmorrhage complicated with cholæmia); (*d*,) Complex operations involving the stomach, intestine and pancreas—forty-three with twenty-three deaths. The patients' condition in all these cases was very unfavourable.

Van Hook[3] reports a case of stone in the common duct where he used air distension of the biliary passages. He claims the following advantages for this method of identifying the course of the ducts: (1,) It enables us quickly, safely and absolutely to identify these tubes without overlooking any part of them—this is of especial advantage in the dissection of adhesions and neoplasms about the ducts; (2,) Obstructions can be readily located; (3,) It enables us to approximately determine the degree of obstruction; (4,) It will facilitate the location of diverticula; (5,) It will guide us to perforations leading to

abscess cavities or to the free peritoneum ; (6,) It enables us to open the ducts safely and without the fear of incising a collapsed vein ; (7,) It enables us to sound the ducts for stone or stricture by passing the sound into the distended duct either through the gall-bladder or through an opening in one of the ducts ; (8,) The walls of the ducts can be more effectually palpated both from without and from within ; (9,) It gives us an ideal method of testing the accuracy of our sutures in the duct walls. He has constructed a small instrument consisting of a small rubber atomizer-bulb with a rubber tube attached to a suitable tip for insertion into the gall-bladder. This is not necessary, because Van Hook himself used a small bicycle pump in his case. A purse-string suture is passed round the incision in the gall-bladder, and thus the gall-bladder can be tied round a glass tube with a rim at the end if the above apparatus is not used.

Petersen [4] has a long paper with notes on cases of gall-stones from Czerny's clinique in Heidelberg. There were one hundred and thirty-one operations (excluding carcinomata, etc.) ; ten died. Of these cases sixty-three were cholecystotomies, with two deaths ; seven cholecystectomies with two deaths. As regards indications for operation he divides this subject as follows :—

(1,) *Absolute indications :* (*a*,) Acute cholecystitis ; empyema with threatening peritonitis ; (*b*,) Chronic cholecystitis ; hydrops of the gall-bladder ; (*c*,) Chronic relapsing cholelithiasis with great pain ; (*d*,) Chronic obstructive jaundice which has remained unaltered for a long time.

(2,) *Relative indications :* (*a*,) Chronic relapsing cholelithiasis with moderate pain ; (*b*,) Chronic obstructive jaundice in its early stages.

(3,) *Relative contra-indications :* (*a*,) Very intense jaundice, the disappearance of which is probable ; (*b*,) Cholangitis with great swelling of the liver, fever, rigors, etc.

Mayo Robson [5] reports eight fresh cases of choledochotomy, and three of duodeno-choledochotomy. He thinks that Courvoisier's estimate of gall-stones in the common duct being 4 per cent. of all cases is too low from a surgical point of view, and he would put it at 20 per cent. Robson employs a **Sand-bag** under the loin as bringing the duct several inches nearer the surface ; two assistants are needed. An oblique incision through the parietes along the lower border of the right lobe of the liver gives more room than the vertical where the common duct has to be operated on, but if the vertical incision be employed it must be made larger than the one for simple cholecystotomy. The operator, after adhesions have been separated, grasps the common duct between his finger and thumb and makes it promi-

nent, when a vertical incision may be made over the stone, which can be gently squeezed out or removed by scoop or forceps. Fenger's probe can miss a stone, and Robson advises digital exploration of the duct (this is often possible as the duct is dilated) and reserves a bent probe or a scoop for the cases where the duct will not admit the finger. For applying sutures he uses a rectangular cleft palate needle or a simple round intestinal needle ; the first sutures of catgut bring together the muscular and fibrous coats, the final sutures of silk the serous covering of the duct. He inserts a rubber tube and gauze drain and leaves it for twenty-four hours or longer, and, generally at the same time, drains the gall-bladder as in an ordinary cholecystotomy. To obviate hæmorrhage, to which there is a great tendency in these cases, with long-continued jaundice he gives ½-drachm doses of **Calcium Chloride** thrice daily for a few days before operation, and also for twenty-four or forty-eight hours before operation a **Nutrient Enema** containing 1 drachm thrice daily ; since adopting this treatment he has had little or no trouble from hæmorrhage. The operation of duodeno-choledochotomy is done as follows : The termination of the common duct including the duodenum is grasped between the finger and thumb of the left hand, then cut through the anterior wall of the duodenum, exposing the internal surface of the posterior wall of the intestine with the duct running in it. In two cases the duct was laid open from the papilla, and in another case he cut directly on the stone through the posterior wall of the duodenum. Bile flows freely as soon as the obstruction is removed, and it must be mopped away by gauze pads as it always contains pyogenic organisms and is therefore infective ; no sutures are placed in the posterior wall of the intestine, and the incision in the duodenum is sutured by a continuous catgut suture for the mucous membrane and continuous silk suture for the peritoneum. No drainage is required.

McBurney,[6] who was the first to do the operation of duodeno-choledochotomy, reports a case of this operation. He has done it six times with one death after prolonged and uncontrollable vomiting. McBurney thinks this operation has a much wider application than has been given to it, and his experience would lead him to prefer it for the removal of a calculus situated at almost any point from the termination of the cystic duct to the point of entrance of the common duct into the duodenum. The orifice of the duct is readily dilatable and it may be freely incised for at least half an inch with perfect safety ; the operation is quicker, cleaner, and safer than the one usually done, and its advantages are that by the introduction of a probe the bile ducts can be examined for a long distance upward towards the

liver, and also the orifice of the duct having been dilated to a large extent there is far less likelihood that overlooked fragments of gall-stone, granular material or thick bile will be retained and give rise to further obstruction.

REFERENCES.—[1] "Rev. de gynèc. et d' obstet.," Jan. and Feb., 1899, quoted in Epit. "Brit. Med. Journ.," May 6, 1899 ; [2] "Langenbeck's Archiv.," vol. lviii, part 3 ; quoted in Epit. "Brit. Med. Journ.," July 8, 1899 ; [3] "Ann. of Surg.," Feb., 1899 ; [4] "Beiträge f. klin. Chir.," Band 23, Heft. 3 ; [5] "Brit. Med. Journ.," Nov. 5, 1898, p. 1405 ; [6] "Ann. of Surg.," Oct., 1898, p. 481.

GANGRENE (Spreading Traumatic). *Priestley Leech, M.D., F.R.C.S.*

Lindenthal and Hitschmann[1] have investigated six cases of this disease. They found an anaërobic bacillus in five of the cases, and in four of these it was in pure culture ; in the sixth case the bacterium coli commune was the exciting agent. Their conclusions are as follows :—

(1,) Spreading traumatic gangrene (gangrène foudroyante) is a wound infection characterised by progressive necrosis and primary gas formation in the tissues. The infection most often follows wounds soiled with dust and earth. It spreads very quickly by means of the lymphatics, and kills under the guise of an intoxication. Post-mortems show either degeneration only of the parenchymatous organs, or, if the bacteria have gained access to the blood stream just before death, the viscera may contain gas.

(2,) It is clinically and etiologically, as well as anatomically and histologically, a quite different infection from cellulitis (phlegmon) ; it is a simple fermentation of the muscle-glycogen and muscle-albumin which spares for the most part the connective tissue ; it is essentially a disease of the parenchyma. Clinically, too, it runs its course without any of the usual signs of inflammation. Incisions and *post-mortem* examinations show the absence of any suppuration ; microscopically there are no signs worth mentioning of inflammatory infiltration.

(3,) Mixed infections occur and cause, together with the characteristic signs of spreading gangrene (necrosis and gas-formation), signs of inflammation.

(4,) Spreading traumatic gangrene presents clinically, anatomically and histologically a single entity, but etiologically different infections may be found. Up to the present the following may be the cause of the disease : (*a*,) An anaërobic bacillus described by Welch and Flexner, by Fränkel and by the authors ; (*b*,) The bacillus of malignant œdema ; (*c*,) In rare cases the bacillus proteus ; (*d*,) In diabetics the bacterium coli commune.

(5,) From a clinical point of view it is one of the most deadly forms of wound infection ; the greater number of the cases die; a few are saved by early **Amputation.** Incisions as well as the extensive use of antiseptics are useless for arresting the infection.

Tubby and Southey Wright[2] report a case of this disease following a compound fracture of the ulna and radius of the right forearm. Amputation was done through the middle of the upper arm, although discolouration had spread to the shoulder and a dusky, coppery patch of discolouration on the trunk below the axilla. **Antistreptococcic Serum** was injected on the possibility of a mixed infection being present; five injections were made, all into the area of discoloured skin. The child recovered. The "Clinical Research" reported that no bacilli of malignant œdema were present, but many of the streptococcus longus.

REFERENCES.—[1] Suppl. to "Centralb. f. Chir.," No. 27, 1899, p. 5 ; [2] "Lancet," Nov. 5, 1898, p. 1420.

GENERAL PARALYSIS OF THE INSANE. (See "Insanity.")

GLANDS (Lymphatic). (See "Lymphadenitis.")

GLAUCOMA. *F. Richardson Cross M.B., F.R.C.S.*

Some new suggestions have been made with regard to the pathology and treatment of this disease. Bitzos[1] (Constantinople) states that the form of primary glaucoma commonest in the East commences as a *papillitis.* He believes that this inflammation causes blocking of the posterior lymph channels through the optic nerve, which in turn causes distension of the vitreous sac, and thus gives rise to the typical symptoms. He finds, however, that medication is seldom effectual, and iridectomy is usually necessary.

Jonnesco[2] (Bucharest), on the other hand, believes that glaucoma is caused by *irritation of the cervical sympathetic.* He says that the ocular fibres of this nerve traverse the superior cervical ganglion, and cause, when stimulated: (1,) Contraction of the arterioles, which in its turn, he thinks, gives rise to increased blood pressure, leading to extravasation and increase of aqueous humour; (2,) Possibly direct increase in the amount of aqueous humour secreted ; (3,) Dilatation of the pupil with blocking of the corneo-iritic angle ; (4,) Contraction of the peribulbar unstriped muscle fibres, giving rise to compression of the emissary veins, and intra-ocular congestion.

Acting upon his theory that irritation of the sympathetic would thus tend to set up a glaucomatous condition of the eye, Jonnesco has removed the superior cervical ganglion in seven cases of the disease, in all of which, even when iridectomy had previously been performed

without benefit, satisfactory results followed. He considers that the operation may be of benefit in any form of glaucoma, but is especially indicated in those cases in which irritation or inflammatory symptoms are either slight or absent, and states that it causes an immediate and permanent fall in the intraocular tension, and an energetic contraction of the pupil, together with relief of pain and irritative attacks, if present, with marked permanent improvement of vision except in cases where optic atrophy was previously complete, while slight sinking of the eye in the orbit, and falling of the upper lid also occurred and were permanent. The constitutional disturbance resulting was transient and unimportant.

The steps of the operation are :—

(1,) An incision, 8 to 10 c.m. long, is made along the anterior border of the sterno-mastoid, commencing at the level of the angle of the jaw.

(2,) The anterior border of the sterno-mastoid is cleaned and pulled backwards and outwards ; the deep layer of the sheath of the muscle is divided, and the larynx is retracted inwards.

(3,) The carotid sheath is opened, and the internal jugular vein is exposed and drawn outwards and backwards, the internal carotid artery and vagus nerve being drawn inwards.

(4,) The deep layer of the carotid sheath and the prevertebral aponeurosis are broken down with a director, when the inferior extremity of the superior cervical ganglion should be easily recognised and secured. This is well isolated from the surrounding structures with the index finger, all the afferent and efferent fibres being snipped with a blunt-pointed, curved scissors.

(5,) A fixation forceps is applied as near as possible to the upper extremity of the ganglion, which is torn away with a sharp and rather violent traction. The nervous cord is then divided below the ganglion, which is removed.

The wound is sutured in two stages—one deep, uniting the border of the sterno-mastoid to the subcutaneous tissues, and one superficial. There is no hæmorrhage, and no drainage tubes are inserted. The dressings are removed on the sixth day, when the wound should be healed. The bilateral operation can be done in fifteen minutes.

Considering the well-established facts as to the mechanical causation of the large majority of cases of glaucoma at the corneo-iritic angle, together with the satisfactory results of iridectomy, the heroic method of Jonnesco would seem to be justifiable only in quite exceptional cases.

REFERENCES.—[1] "Archives d'Ophth.," xvii, p. 30 ; [2] "La Presse méd.," June 8, 1898 ; "Treatment," Aug. 25, 1898.

GOITRE. *W. Milligan, M.D.*

Parenchymatous Goitre.—In the "Medical Press and Circular," of July 20, 1898, a short description of Doyen's method of extirpating enlarged thyroid glands will be found. A transverse incision is first made in one of the folds of the skin of the neck, and after the superficial veins have been tied and the tumour exposed, the index finger of the right hand is insinuated between the fibrous capsule of the goitre and its cellular covering, which is then separated from the tumour in a few seconds. The tumour is then brought out through the wound before any attempt at hæmostasis is made on the intrinsic vessels of the growth. The deep connections are thus reduced. The vascular pedicles being reduced to their minimum by the operator's fingers are rapidly ligatured and cut after the application of forceps upon the side of the tumour. This method is stated by M. Doyen to be particularly rapid, and to bring out the tumour with no attachments but its pedicles. As it is separated by the finger from its deep attachments, it is drawn away from important nerve structures, laryngeal, phrenic, pneumogastric, etc., as also from the large arteries and veins of the region.

According to Kocher[1] thyroidectomy is indicated: (1,) For malignant tumours of the thyroid gland; (2,) For acute or chronic struma; (3,) For parenchymatous goitres (diffuse hypertrophies of the gland); (4,) For polycystic goitres; (5,) For multinodular goitres.

Strumectomy (intra-glandular enucleation) is indicated: (1,) In unilocular cystic goitres; (2,) In isolated nodules situated in normal tissue, if they can be removed rapidly and without marked hæmorrhage; but otherwise a thyroidectomy is indicated; (3,) For large nodules situated in immobile goitres.

Reverdin,[2] in an analysis of over six thousand operations upon the thyroid gland, finds that the mortality after total extirpation is 18·9 per cent.; after intra-glandular enucleation but ·78 per cent. He recommends a transverse incision, which, if neatly sewn up, leaves hardly a perceptible mark. After operation (even if running a sterile course), there is commonly a distinct fever—thyroid fever—supposed to be due to absorption of the thyroid secretions.

REFERENCES.—[1] "Rev. de chir.," April, 1898; [2] "Therap. Gaz.," Feb. 15, 1899.

GOITRE (Exophthalmic). *W. Milligan M.D.*

Thyroidectomy in Exophthalmic Goitre.—Sir William Stokes,[1] in a paper upon the above subject, arrives at the following important conclusions:—

(1,) That in a large majority of cases of Graves's disease shock is apparently the starting point of the affection.

(2,) That in one type or form of the disease the first tangible pathological deviation is enlargement of the thyroid.

(3,) That in such cases tachycardia, palpitation, and exophthalmos usually follow in that succession.

(4,) That two distinct forms of the disease may be recognised, viz. : —the complete and incomplete forms, and that for the purposes of prognosis and guide to treatment a distinction should be made between the cases commencing with tachycardia and those in which the thyroid enlargement precedes the palpitation.

(5,) That only a very temporary benefit is, as a rule, derived from internal medication.

(6,) That partial removal of the enlarged gland, when it is primarily affected, is likely to be followed by distinct improvement and at times perfect recovery.

Jonnesco[2] holds very different views, and remarks : (1,) That in true exophthalmic goitre surgical interference is both dangerous and ineffectual ; (2,) Simple section of the cervical sympathetic is useless, although partial resection including the first two ganglia may give lasting results ; (3,) The operation of selection is total and bi-lateral resection of the cervical sympathetic.

Kocher advises ligature of three of the supply arteries to the goitre at one time, and later on ligature of the fourth.

REFERENCES.—[1] "Brit. Med. Journ.," Oct. 29, 1898 ; [2] "Presse méd.," Oct. 23, 1897.

GOITRE (Exophthalmic). *Græme M. Hammond, M.D., New York.*

The "Medical News,"[1] in a recent editorial on this subject, voices the general opinion that some fault in the secretion of the thyroid gland is the fundamental cause of Graves's disease. That the symptoms are due to an excess of thyroid secretion is as yet only a theory. Whether an excess of some toxic principle is thrown into the circulation, or whether some toxic material that neutralises toxins is kept out, is not definitely known. Certain features of the disease, to which a good deal of attention has been directed, would seem to indicate that the influence of the thyroid is indirect, and is exerted, partially at least, through the gastro-intestinal tract. Besides the intermittent diarrhœa there are other symptoms, such as a capricious appetite, gastro-intestinal uneasiness, and the presence of indican, that are supposed to indicate disturbance of intestinal digestion and absorption. Janeway,[2] after assuring the patient that the disease is not incurable, confines his efforts to improving the general nutrition, and administers **Strophanthus** and **Iron.** When œdema occurs **Digitalis** is given in addition.

Mendel has long insisted that he is able to cure practically all the patients with Graves's disease. His plan is that outlined by Janeway, with the additional advice to take from twelve to fourteen hours of sleep a day, and a plentiful, but as far as possible unirritating diet. Large quantities of milk, five or six or more litres in twenty-four hours, are recommended. Worry and annoyance should be avoided.

Allen[3] reports two cases in which **Pig's Bile** was used with great benefit. In one case he used altogether 48,000 grains. Some 3,000 grains of this was administered hypodermically, nearly 1,000 grains directly into the thyroid gland. His patient improved mainly, as he admits, because of the effect of the bile taken by the mouth.

These observations would seem to confirm the opinion that whatever may be the direct pathogenic basis of Graves's disease treatment of the gastro-intestinal condition is always the principal indication.

Pollard and Lake[4] report a case very much benefited by **Excision of a Portion of the Thyroid Gland.** These authors believe that there are two forms of the disease, one characterised by enlargement of the thyroid, and the other without such enlargement. In the former case they believe a portion of the thyroid should be removed, in the latter case they advocate the excision of the cervical sympathetic ganglia preferably on both sides. The removal of the ganglia previous to the operation on the gland is said to make the latter much less dangerous. Their patient was a woman thirty-one years old. There were enlargement of the thyroid with exophthalmos, Stellweg's symptom, and a pulse of from 130 to 160. The day after the operation the patient suffered from convulsions with cyanosis, and cyanotic attacks occurred several times during the first week. There was also contraction of the flexors of the digits and pain in the throat, especially while swallowing, for four days. Following this, the intense headache disappeared, the pulse rate fell to 98, and later was nearly normal, and the exophthalmos disappeared. She became able to cycle freely and to take active exercise.

Jaboulay[5] states that he has **Stretched the Pneumogastric Nerve** in one case in which there was severe attacks of coughing, especially at night. Section of the left cervical sympathetic caused the corresponding eye to retreat into the orbit and suppressed the diplopia; stretching of the left pneumogastric arrested the cough. The patient was greatly benefited by this double operation.

Minor believes many cases depend upon an intestinal auto-intoxication. He reports two cases treated on this supposition. One recovered completely; the second case, while still presenting objective symptoms, was entirely free from any subjective symptoms.

The treatment consisted of a **Strictly Regulated Diet,** in which the starches, sugars, and table dainties, were cut down to a minimum or entirely eliminated, with rest at first, followed by carefully graded exercises and good hygiene. Medication consisted in the administration of the **Lactate** or **Albuminate of Iron,** anti-ferments at meal time, with an occasional mercurial purge and intestinal lavage. Large quantities of water were used at a temperature of 102° F., and were retained for half an hour. Lavage was continued at intervals for over a year, and in one case was followed by an apparently complete restoration to health, except for a slight, almost imperceptible, prominence of the thyroid.

REFERENCES.—[1] Oct. 8, 1699; [2] "Med. News," Aug. 26, 1899; [3] "London Lancet." Aug. 26, 1899; [4] "Brit. Med. Journ.," Oct. 14, 1899; [5] "New York Med. Journ.," May, 1898.

GOITRE (Treatment of). *Priestley Leech, M.D., F.R.C.S.*

Horsley,[1] in an address, draws attention to a few noteworthy points in the treatment of goitre. The majority of cases of enlarged thyroid are cases of adenomatous enlargement ; if the adenomata commence as localised tumours they very often become cystic ; these cysts have thick walls and brownish, chocolate-coloured contents, and have a special tendency to contract adhesions to surrounding parts. Parenchymatous enlargement is not, as was formerly taught, the commonest affection ; if it does not subside under treatment it goes on to universal cystic enlargement, multiple and small cysts developing from the enlarged acini. Malignant thyroid is either general thyroid malignancy, where the secondary deposits present microscopically the appearance of practically normal thyroid tissue, and the other form of malignant disease is carcinoma arising from the para-thyroid tissue. Finally, there is exophthalmic goitre. With regard to treatment the simple adenoma merely require to be shelled out. In parenchymatous goitre when cystic excision of the whole mass is needed, as under these circumstances we have multiple cysts ; the whole gland under some circumstances may have to be excised, and this will necessitate the continual administration of **Thyroid** for the rest of the patient's life.

Single cysts require shelling out ; injection and drainage of these should be abandoned. As regards malignant disease **Early Excision** is the only means of treatment, and the whole gland must be removed, although at the operation one lobe may alone appear to be affected. If the patient comes too late the question arises whether tracheotomy should be done. It is a difficult question to decide ; in some cases no relief is given by tracheotomy. As regards prognosis in malignant

disease, if the surgeon is satisfied at the operation that he has been able to remove the whole gland and that at no spot has the growth escaped from the capsule he may promise there will be no return ; the ordinary lymphatic glands only become infected after the growth has got through the capsule. In advanced cases of exophthalmic goitre removal of a portion of a gland or ligature of the vessels may be done. Horsley's experience is that ligature of the vessels produces little or no result. Removal of a portion of the gland produces a most striking and remarkable effect, in fact you may say that in many cases it will produce a cure.

REFERENCE.—[1] "Clin. Journ.," March 8, 1899.

GONORRHŒA. *C. F. Marshall, M.D., B.Sc., F.R.C.S.*

TREATMENT.—Janet,[1] whose name is associated with the irrigation treatment of gonorrhœa, gives his experience during the last five years. He still considers it the best form of treatment, and **Permanganate of Potassium** the best drug to use, although when this failed he obtained good results with **Itrol.** He strongly condemns the practice of leaving the urethra alone during the first few days of the disease. During the first period he maintains that much damage is done to the urethra, and also that the organism is affected by the toxins of the gonococcus. In fact he attributes most cases of chronic gonorrhœa and its complications, including stricture, to the practice of not treating the first stage of the disease.

The apparatus consists of a glass douche vessel holding a litre, with a suspensory apparatus for different heights. The vessel is connected by a rubber tube with a glass cannula for the meatus.

Abortive Treatment of Acute Gonorrhœa.—This consists in the irrigation of the anterior urethra at the earliest stage of the disease, viz., when there is swelling of the meatus and hardness of the urethra. The anterior urethra only is irrigated unless the posterior is also affected (which is shown by making the patient pass urine into two glasses ; if the second glass is turbid the posterior urethra is presumably affected). For anterior irrigation a pressure of 50 cm. is enough. As soon as the urethra is distended the liquid is allowed to flow out by withdrawing the cannula a little. The urethra is also from time to time expressed by the finger from perineum to meatus. These irrigations are performed twice a day with a litre of luke-warm **Permanganate Solution** (1 in 2,000). If this causes congestion of the urethra, a weaker solution is used. In three or four days' time the irrigation is done once every eighteen hours, then every twenty-four hours ; the strength of the solution being increased to 1 in 1,000 by the

eighth day. After this, if the discharge is mucoid, it is done every forty-eight hours, and omitted after disappearance of the gonococci. If recurrence takes place the treatment is repeated and examination made for posterior urethritis. If this is found, the whole urethra is irrigated from a height of one mètre, after cocainising the urethra. During this performance the patient is told to attempt to make water and so relax the sphincter of the bladder; at the same time the operator gradually allows the liquid to flow into the bladder. If there is any spasm the cannula is withdrawn and the operation commenced again. The solution used is 1 in 4,000 in new cases, but in cases which have had irrigation before it may be increased to 1 in 1,000.

Sub-acute Gonorrhœa.—This includes cases of urethritis originally caused by gonorrhœa. Janet irrigates the whole urethra as above, beginning with 1 in 4,000 and increasing to 1 in 1,000 (permanganate). This is continued till the gonococci have disappeared, and the morning drop is colourless. Urethral threads, he says, may persist after the cocci have disappeared. After the first few irrigations the patient is allowed to perform them himself.

Proofs of Cure and Consecutive Treatment.—Janet bases the proof of cure on: (1,) The effect of drinking beer; (2,) The effect of coitus after supposed cure. He recommends the patient to take on beer for eight days after apparent cessation of symptoms. He should then drink beer and examine for any recurrence. He should wait another eight days before coitus, and if all is well then he may be considered cured. These tests are only of use in recent gonorrhœa, because extra-urethral foci may exist which are not affected by these tests. He is of opinion that patients recently treated are liable to infection from healthy women or even spontaneously, and that a urethra recently treated may continue to have a muco-purulent discharge after disappearance of the gonococci. If the urethritis is comparatively recent, he waits for spontaneous disappearance, which is usually early. If the discharge lasts one or two months he recommends anterior irrigation with **Silver Nitrate,** 1 in 2,000. In chronic cases, if this fails, he uses dilatation with sounds, or the application of ointments.

Treatment of Extra-urethral Foci.—If during irrigation gonococci are found in a vigorous condition, Janet concludes that there are extra-urethral foci which irrigation does not reach. Such foci are: (1,) Prostatic; (2,) Glands of the anterior urethra; (3,) Crypts of the fossa navicularis and meatus. To search for prostatic foci he makes the patient urinate in two glasses, and also keep some urine in the bladder. Then any urine in the anterior urethra is expressed and

the prostate gently massaged. If a drop appears at the meatus it is examined for cocci. Even if these are absent, but leucocytes present, prostatic infection may be suspected. If massage of the prostate causes no drop of discharge, the patient discharges the rest of the urine in the bladder, and this is compared with that in the second glass of urine passed before. If the third glass is more turbid than the second, the contents are subjected to centrifugal action and analysed. Prostatic secretions too minute to flow to the meatus are obtained, even if gonococci are present or not, but where there are many leucocytes, it is better to treat the case as one of prostatic infection.

Examination of the glands of the anterior urethra is made by *gentle massage after micturition.* If there is a drop of pus with or without gonococci, infection is suspected. Sometimes the glands may be felt as hard nodules, and occasionally they form peri-urethral abscesses.

The treatment of prostatic infection consists in massage of the prostate before each irrigation. Glands of the anterior urethra are treated in the same way. Peri-urethral abscesses and crypts should be opened and scraped, and irrigated afterwards.

Complications.—(1,) *Stricture.*—If there is a slight stricture, Janet first uses irrigation, and then dilates the stricture. If the stricture is more severe he does simultaneous dilatation and irrigation, thus: After micturition *a small complete irrigation* is done with **Boracic Lotion** into the bladder; the stricture is then partly dilated and the patient passes the boracic lotion; then a complete irrigation with 1 in 4,000 **Permanganate** is performed and the stricture further dilated. Finally, complete dilatation is done. This method is said to avoid complications such as orchitis, which is liable to follow the use of sounds in a urethra infected with gonococci.

(2,) *Cystitis.*—Janet gives three varieties of cystitis: (1,) That caused by simple irritation from matter in the posterior urethra; (2,) Extension of inflammation; (3,) Infection by secondary microbes. Treatment of the first condition is the same as for gonorrhœa, taking care that only *small quantities* of permanganate enter the bladder. Infective cystitis is best treated by **Itrol,** 1 in 4,000, or **Silver Nitrate,** 1 in 1,000.

(3,) *Epididymitis, Rheumatism, etc.*—If epididymitis is present, it is best to wait till acute symptoms have passed off. When rheumatism, endocarditis, etc., occur, Janet thinks urethral treatment should be carried out, whatever the acuteness of the urethritis or of the complications. If these complications are due to the toxins of the gonococcus a cure is obtained by irrigation. If it is a case of general gonococcal infection, the treatment will have no effect; yet it should

always be practised to suppress the primitive seat of infection and the origins of the toxins.

Goldberg[2] has used irrigation extensively. He considers that gonococci are destroyed by this means in 95 per cent. of cases, and that this takes place in more than half the cases in from one to two weeks. This result is due to the combined mechanical and chemical action of irrigation, and perhaps also there is a true specific action on the cocci. Goldberg thinks the treatment is contra-indicated in the acute stage.

Wassidlo[3] has also treated many cases. He is favourably impressed with the treatment, but thinks the statements of previous writers are exaggerated, and that further results are required. In a large percentage of acute and chronic gonorrhœas, the gonococci disappear and the secretion ceases under the treatment, but the duration of treatment cannot be predetermined; and there is not yet enough proof that in many obstinate cases a cure can be effected by irrigation. Wassidlo thinks the abortive method, carried out as strictly as Janet first proposed, is impracticable in private practice.

Werner[4] has treated many cases by irrigation, using a 1 to 2 per cent. solution of **Ichthyol.** Four litres of this were used daily; also morning and evening injections with a ½ per cent. solution. Werner gives the results of eighty-two cases treated in this way, fifty-three having posterior urethritis, and nineteen anterior urethritis. All these were cured except ten. By "cured" he means absence of discharge, absence of threads, and absence of gonococci.

The average number of irrigations in Werner's cases was 17·4; and the duration of the disease before treatment varied from one to over five months. Werner states that gonococci disappear in 55 per cent. of cases within the first seven days. Besides cases of urethritis, Werner has treated six cases of acute gonorrhœal cystitis by ichthyol irrigations. Three were irrigated through a catheter, and three in the usual way. After two irrigations he states that the tenesmus subsided, the temperature fell, and the urine became clear. After eleven to fifteen irrigations the patients were cured. He considers this treatment is indicated in all cases of acute cystitis.

Valentine[5] has used the method for some time. He maintains: "(1,) That every urethra, not too tightly strictured, and every bladder can be irrigated without a catheter; (2,) Irrigations, properly employed, will cure gonorrhœa quicker than any other mode of treatment; (3,) Internal medication is futile, hand injections are useless." Valentine uses a glass irrigator, which is raised or lowered by means of a pulley; the glass nozzles are of three sizes for different sizes of meatus, and

are surrounded by a bell-shaped glass shield to prevent spurting of the injected fluid. The patient is seated on a chair so that the sacrum rests on the extreme front edge of the chair, and the irrigation is carried out much in the same way as Janet's description.

For posterior and bladder irrigation Valentine uses a pressure of seven feet. Occasionally, he says, the liquid will cause "ballooning" of the urethra and refuse to enter the bladder. He then orders the patient to urinate, and repeats the irrigation, which usually succeeds the second time. A small quantity of urine can arrest irrigation. Also, if the full stream of fluid is turned on at once, urethrospasm is produced. The pressure must be turned on very gradually. He says the irrigations are as a rule painless, but in some cases it is necessary to use cocaine to the urethra before irrigation. Valentine uses **Permanganate of Potassium** as a rule (1 in 6,000 to 1 in 1,000), and the irrigations are done daily. He has also used **Perchloride of Mercury** (1 in 50,000 to 1 in 20,000); **Silver Nitrate** (1 in 10,000 to 1 in 1,000); **Copper Sulphate** (1 in 2,000 to 1 in 500); **Argonin** (up to 5 per cent.).

Urethral Injections.—Vajda[6] has conducted a series of observations on the extent to which urethral injections penetrate the urethra. His method is to inject a solution of $\frac{1}{2}$ or $\frac{1}{3}$ per cent. methylene blue, and then by the endoscope to see how far the injection has passed. This solution is easily recognised in the diseased urethra; causes very little irritation, and has an anti-gonococcal action.

The author uses a syringe of 12 cubic centimètres capacity, with a piston which works uniformly. The diameter of the syringe is 1·2 cm., that of the outlet ·12 cm. The resistance of the syringe is from 98 to 58 cm. of water pressure. The nozzle of the syringe is inserted so as to close the meatus, and the piston is pushed slowly and uniformly till resistance and strangury occur. In sensitive patients only 6 c.cm. are used. His conclusions are as follows: (1,) Urethral injections performed in the usual way, with few exceptions, each the membranous and prostatic urethra, as is shown by the endoscope after injection of the methylene blue solution; (2,) The injected fluid not only passes along the central part of the urethra, but also reaches the folds of the mucous membrane and the openings of the seminal ducts.

J. Moore[7] gives the results of nine cases of acute gonorrhœa in the male, treated by the internal administration of **Methylene Blue.** All were first attacks. Two cases were seen four or five weeks respectively after the discharge had ceased, and no recurrence had occurred. In one of these the discharge ceased in twelve, and in the

other in sixteen days. The dose was 3 grains three times a day. The drug is excreted unchanged in the urine.

Several *new preparations of silver* have been made of late years to replace silver nitrate as an injection for gonorrhœa. The disadvantages of silver nitrate are its painfulness, and the precipitation of albumin, which hinders the penetration of the drug into the mucous membrane of the urethra. The chief new silver preparations are **Argonin, Protargol, Largin** and **Itrol.** The last is citrate of silver. the others are compounds of silver with albuminous bodies.

Protargol was introduced by Neisser, and has been used extensively by other surgeons. Goldenberg[8] considers it the best of the silver preparations. He uses a 1 per cent. solution for the anterior, and ½ to 1 per cent. for the posterior urethra. He allows the patient to irrigate the anterior urethra himself, but advises the surgeon to treat the posterior urethra himself. He uses Janet's irrigation method for the anterior urethra, but a large syringe for the posterior urethra, as he considers that the resistance of the constricting muscles is more easily overcome by this than by hydrostatic pressure. Goldenberg has also tried insufflation of pure protargol through an endoscope tube, and a 10 per cent. ointment of the same drug applied by steel sounds.

Strauss[9] has used protargol in thirty acute cases of gonorrhœa. He uses Neisser's method of prolonged injection, commencing with a ½ per cent. solution, and increasing to 3 per cent. for anterior urethritis. He gives the injections thrice daily, the morning and mid-day ones being retained for ten or fifteen minutes, the evening one for twenty or thirty minutes. For posterior urethritis he uses either instillation with a 10 per cent. or irrigation with a ½ to 1 per cent. solution. He advises treatment to be begun early and to be continued for several weeks, and for some time after the gonococci have disappeared. He agrees with Neisser that the main feature of the treatment by protargol is continued action and not abortive cure.

Barlow[10] also advocates protargol, and states that by its use the urethritis is usually limited to the anterior urethra. He thinks the anterior urethra is treated as well by ordinary injections as by irrigation. He limits irrigation to the treatment of posterior urethritis, but prefers a syringe if the patient can be taught to use it properly.

Columbini[11] is a strong advocate of protargol. He uses a 10 per cent solution prepared by pouring 5 c.cm. of neutral glycerin into a small mortar, and adds to this 10 grammes of protargol, stirring the mixture till a homogeneous paste is formed. This is then diluted with 95 c.cm. of cold sterlised water, and shaken up till a perfect solution

is formed. This is kept for use in a coloured bottle. From this stock mixture solutions are prepared, as required, of different strengths from $\frac{1}{4}$ to 2 per cent. These are used for injection according to the stage of the disease. In the acute stage the $\frac{1}{4}$ per cent. solution is used. The method of injection is as follows: After making the patient micturate, the glans and prepuce are washed with some antiseptic, and a syringeful of protargol is injected so as to allow it to flow out. The syringe (holding 6 c.cm.) is refilled to two-thirds of its capacity and the solution injected slowly, the meatus being this time closed. The fluid is retained for fifteen minutes, and the patient told not to urinate for an hour. As the inflammation subsides the solution is increased in strength. On the first day one injection is given, the next day two, and on the third and following days three. The treatment is continued twenty days after cessation of the discharge, the daily number of injections being reduced to one. According to Columbini, protargol is the best remedy for gonorrhœa.

The first preparations of **Argonin** had the disadvantage of being soluble with difficulty and easily decomposed. A new preparation is described by Jellink[12] which contains 10 per cent. of silver, is easily soluble in cold water and can be kept for several months. He has used a 1 per cent. solution for injection in both anterior and posterior urethritis, the injections being made thrice daily with a 10 c.cm. syringe. After disappearance of the gonococci the argonin is replaced by injections of zinc sulphate. Jellink thinks the new argonin one of the best of the new preparations.

Largin is the latest silver albumin compound, and contains 11 per cent. of silver. According to Pezzoli a 1 in 4,000 solution kills gonococci in five minutes. It is stated to have a more penetrating power than the other silver compounds. Kornfeld[13] reports twenty-nine cases treated with a $\frac{3}{4}$ to $1\frac{1}{2}$ per cent. injection. The length of treatment was, on the average, thirty days. He thinks that largin is one of the best drugs for injection in gonorrhœa, and that it shortens the course of the disease and prevents posterior urethritis. In chronic cases it is not better than silver nitrate. Injections should be made frequently, and the fluid retained for ten or fifteen minutes.

Itrol is recommended by Wesler and Schill[14] as an injection for acute gonorrhœa. As solutions of itrol easily decompose when in contact with organic matter, the syringe must be washed out with hot water before use, and the solution must be put in a clean vessel. Wesler used a solution of 1 in 4,000 for fifty cases with no bad results. Schill has treated one hundred cases with good results. He recom-

mends treatment to be begun early, and injections to be given four or five times a day. The syringe should hold 6 to 8 c.cm. ; the strength of solution should not exceed 1 in 10,000 ; it should be retained for ten minutes in the urethra.

Gravagna,[15] on the other hand, has compared the results of treatment by argonin, argentamin, and protargol. Microscopic examination showed the presence of gonococci long after the onset of treatment. He concludes that the disease is not cut short by these drugs, and that they have no advantages over the older methods. On the other hand, they have no disadvantages. Behrend[16] states also that in thirteen cases treated by him with a ½ to 1 per cent. solution of protargol, the gonococci did not disappear during the treatment in any case. He, therefore, is not an advocate of protargol.

Kopp[17] is also of opinion that the results of treatment by the silver preparations are no better than those with the older methods. Argonin and argentamin are not satisfactory ; largin is better, but the best are **Protargol** and **Itrol.** Kopp recommends irrigation for posterior urethritis with weak solutions of silver nitrate (·02 to ·05 per cent).

Landau[18] has experimented on the female with injections of **Yeast** for gonorrhœa. His object was to discover a method which, without being harmful to the patient, would destroy the gonococci and their toxic products. He acted on the principle of substituting for the gonococci cultures of other organisms of greater vitality and power of propagation, and found that common yeast fulfilled these requirements. Out of forty cases he claims that more than half were cured, sometimes after only one or two applications. In a second series, however, temporary improvement took place, followed by recurrence. In a third series the catarrh was diminished, and in a few there was no improvement. Ordinary yeast was used diluted with a little beer, and injected into the vagina with a syringe and retained by tampons. The treatment was repeated every two or three days and continued for several weeks.

REFERENCES.—[1] "Rev. de thérap. méd. chir." Dec., 1897 ; [2] "Centralb. f. Harn. und Sex. Organe," March, 1896 ; [3] Ibid., Feb., 1896 ; [4] "Monats. f. Pract. Derm.," Aug., 1896 ; [5] "New York Med. Rec.," June 5, 1897 ; [6] "Wien. med. Woch.," Nos. 23–28, 1897 ; [7] "Brit. Med. Journ.," 1897 ; [8] "New York Med. Journ.," Jan. 22, 1898 ; [9] "Monats. f. pract. Derm.," vol. xxvi., 1898 ; [10] "Münch. med. Woch.," Nos. 45 and 46, 1897 ; [11] "Atti. della R. Acad. de Fisiocutici," vol. x, 1898 ; [12] "Wien. med. Woch.," No. 5, 1899 ; [13] "Wien. med. Presse," Aug., 1898 ; [14] "Therap. Monats.," April, 1899 ; [15] "Rig. Med.," July 28, 1898 ; [16] "Berlin. klin. Woch.," April, 1898 ; [17] "Münch. med. Woch." Nos. 31 and 32, 1899 ; [18] "Deut. med. Woch.," March, 1899.

GONORRHŒA IN WOMEN. *C. F. Marshall, M.D., F.R.C.S.*

DIAGNOSIS.—Finger[1] gives a *résumé* of recent observations on the diagnosis of this disease in women, and the parts most usually affected by the gonococcus. These results claim to prove that the vagina is the part least often affected in gonorrhœa, and when affected it is due to secondary inflammation from the retention of gonorrhœal secretion from the cervix or urethra; also that gonococci may be present in women in an active condition, although the clinical symptoms of gonorrhœa are absent.

The results of observations by Horand,[2] Welander,[3] Brünschke,[4] Lucsny,[5] Schulz,[6] Steinschneider[7] and Neisser[8] go to prove that: (1,) No diagnosis can be made without microscopical examination; (2,) That contagious cases are often overlooked; (3,) That the parts affected by the gonococcus, in the female, in order of frequency are the urethra, the cervix, Bartholin's ducts, and the least of all the vagina.

The above observations are so much at variance with what we in England are accustomed to diagnose as gonorrhœa, that they cannot be quite free from doubt, although supported by recognised leaders in this branch of the profession. This doubtful view of the subject would seem to receive support from a recent paper of Steinschneider's,[9] who lays down very stringent conditions which must be fulfilled before a confident diagnosis of the gonococcus can be made.

TREATMENT.—C. F. Marshall[10] points out that the treatment of gonorrhœal vaginitis by vaginal injections alone is unsatisfactory, because: (1,) The fluid seldom reaches the cul-de-sacs surrounding the cervix, and so leaves the upper end of the vagina untouched; (2,) The vaginal rugæ are not distended and so the furrows between them are not reached properly by the injected fluid. Thorough treatment may be carried out by three methods: (1,) *Applications of lotions*, such as **Silver Nitrate,** through a speculum, to the whole vaginal surface; (2,) *Plugging the vagina* with wool tampons soaked in medicated fluids; (3,) *Medicated pessaries*, with preferably a glycerin-gelatin basis.

(1,) The first method is usually too painful to perform without an anæsthetic; (2,) The *wool tampon* method consists of passing through a Ferguson's speculum plugs of wool soaked in a **Glycerin Solution** of the required drug. A useful addition to this consists in lubricating the speculum with a vaselin preparation of the same drug. Two or three plugs are usually sufficient. The treatment should be repeated daily and the vagina irrigated with an aqueous solution of the same drug before each application. The drugs which may be used for this purpose are

numerous ; the author recommends glycerin of **Perchloride of Mercury,** 1 in 00 ; glycerin solution of **Ichthyol,** 2 to 5 per cent. ; **Naphthol,** 2 per cent. (alcoholic solution mixed with glycerin) ; **Protargol,** aqueous solution, (2 to 5 per cent.) ; (3,) *The treatment by pessaries* has been used by the author in preference to the above as being less painful and equally efficacious. **Gelatin-glycerin** is the best basis, and should be made so as to dissolve at about blood-heat. The pessaries are about 1½ by ¾ inch in size and are made with the drug required. They gradually melt and lubricate the vagina. The drugs used by the author by this method are the following : **Iodine,** 1 to 2 per cent. ; **Ichthyol,** 2 to 5 per cent. ; **Perchloride of Mercury,** 1 in 500 ; **Argonin,** 5 per cent. ; **Lysol,** 2 per cent. ; **Formalin,** 2 per cent. ; **Airol,** 10 per cent. : **Naphthol,** 2 per cent. ; **Copaiba Resin,** concentrated. The best results were obtained by iodine and ichthyol. Argonin, airol, naphthol and copaiba resin have the objections of being in suspension instead, of solution. Formalin is irritating, but lysol fairly good. This treatment should be combined with *douching* with a weak aqueous solution of the same drug after the pessary has dissolved. The pessaries are best inserted at night, and retained by a wool tampon followed by irrigation in the morning.

The seats of infection in women are, according to Janet,[11] the urethra, the para-urethral glands, the vagina and vaginal glands, Bartholin's glands, the uterus and tubes. Gonorrhœal infection of the uterus and tubes is difficult to cure. He uses the same **Permanganate Irrigation** for the vagina, urethra, and bladder. The contents of the urethral and Bartholin's glands are expressed with the fingers, and then injected with a fine platinum cannula with permanganate. Treatment should be done every day, even during menstruation.

REFERENCES.—[1] "Wien. klin. Woch.," Jan., 1897 ; [2] "Lyon méd.," 1888 ; [3] "Bull. méd.," 1888 ; [4] "Inaug. Dissert.," Wurtzburg, 1891 ; [5] "Inaug. Dissert.," Berlin, 1891 ; [6] "Arch. f. Derm. und Syph.," 1 96 ; [7] "Berlin. klin. Woch.," 1887 ; [8] "Deut. med. Woch.," 1890 ; [9] "Wein. klin. Woch.," Nos. 22 and 23, 1897 ; [10] "Treatment," Nov. 25, 1897 ; [11] "Rev. de thérap. méd. clin.," Dec., 1897.

GOUT. (See also under "Rheumatism.")

Synopsis.—(Vol. 1899, pp. 77 and 301). R Urea, Sodium Bicarbonate, Calcium Carbonate āā ʒj. M. Sig.—Half teaspoonful four or five times daily. Useful in gouty subjects with lumbar pains. To promote absorption and elimination of gouty deposit Luff advises Citrate of Potash, Copious Draughts of Water, Hot Baths. Massage, and use of a table-salt prepared from vegetables, rational diet; mineral water as free as possible from soda salts is best for most cases. Lithium, piperazin, lysidin and sodium salicylate do not dissolve sodium biurate. The following has been used : R Tr Stramonii, ʒj ; Tr. Colchici, ʒjss ; Tr. Guaiaci,

℥ij. M. Sig.—Teaspoonful three times a day in milk. As an external application: ℞ Lithium Sulphichthyolate, 1 part; Vaseline, 2 parts. M. Rub into the painful limb. Edison suggests introduction of lithium into system by electricity.

GRANULOMA (MYCOSIS) FUNGOIDES. *T. Colcott Fox, M.B.*

At the 1898 meeting of the American Dermatological Association Prof. Nevins Hyde and Dr. F. H. Montgomery introduced a discussion by *A Contribution to the Study of the so-called Premycosic Stage of Mycosis fungoides.* The evolution of this incurable malady is characterised by an earlier stage of comparatively superficial eruptions without tumour formation, which may last a few months or twenty years. This is followed by an advanced, terminal, or tumour stage. When the latter is reached the gravity of the affection is obvious, but the earlier pre-tumour, or pre-mycosic, or pre-fungoidal stage is of very great interest, and sometimes exercises the diagnostic powers of the expert to the full, or even continues unappreciated at its full significance. The authors collected forty-eight cases, in thirty-seven of which twenty-four were males and thirteen females. The ages ranged from twenty-eight to sixty-nine and the average was forty-five. The earlier skin manifestations may resemble, if they are not identical with, one of many well-known types of skin disease. Those observers who hold that in certain susceptible people, or in those with special tissue proclivities, a malignant disease may supervene on a chronic eruption call these earlier eruptions by the name of the disease most nearly represented, *e.g.*, erythema, eczema, lichen, pityriasis, psoriasis, furunculosis, etc. The majority of dermatologists, however, regard the disease as a distinct entity throughout, and the early manifestations, though of differing clinical type, are considered the varied expression of a definite process. They are described as erythematous (erythrodermia), eczema-form, pityriasis-like, lichenoid, etc. Some French writers say that the apparently healthy skin is already the seat of characteristic pathological changes. In thirty-five cases there was intense and intractable itching. In twenty-eight there were patches of erythematous redness, more or less defined, rosy, brick, bluish, purple, or brownish. In only one was there no scaling. In six there was oozing, and in five crusting. In eighteen there was strong resemblance to eczema.

As for diagnosis, the authors say that mycosis fungoides may be suspected if a man, forty-five years old or over, has suffered from intolerable and incoercible pruritus for six months to several years, and displays a dermatosis simulating eczema pretty closely, but with polycyclical discs (light to dark reddish), often slightly scaling, some-

Granuloma.

times evanescent, recurrent, or persistent, and which tend to become infiltrated or the seat of lichenoid papules, and still later of fungoid tumours. The health is not much impaired before the tumour formation. We will not stop here to discuss the pathology, and whether the tumours are related to sarcomata or "sarcoid" disease (lymphodermia perniciosa cutis, leukæmia cutis, sarcomatosis), or whether they are manifestations of a distinct granuloma.

We are enabled by the courtesy of Dr. D. C. McVail, of Glasgow, to present our readers with an illustration (*Plate XIII*) of the later stages of a very formidable example of this disease. The case is recorded in the Glasgow Hospital Reports for 1898.

GRAVES'S DISEASE. (See "Exophthalmic Goitre.")

HÆMOGLOBINURIA (Blackwater Fever). *James Cantlie, F.R.C.S.*

Dr. Sambon,[1] in a paper, read before the section of Tropical Diseases, at the British Medical Association, 1898, sums up the prevalent Theories of Blackwater Fever under the following heads: (1,) That it is an unusually severe paroxysm of the ordinary malarial fever; (2,) That it is a peculiar condition caused by the administration of quinine in malarious patients. Dr. Sambon successfully refutes both of these theories, and states his opinion that a special toxic agent is the cause of the disease.

Dr. Sambon holds that the hæmoglobinuric fever of man is caused by a parasite similar to that which causes the hæmoglobinuric fever of cattle, that is to say, its specific agent belongs to that group of hæmosporids which multiply by simple binary division, and of which *Pirosoma bigeminum* is a well-known type. He further believes that paroxysmal hæmoglobinuria stands to blackwater fever in the same relation as entero-colitis (the dysentery of northern latitudes) to tropical dysentery.

It is seldom until the end of the second year (Crosse) of residence in a district where blackwater fever is endemic, that the disease develops. The parasites of malaria are frequently met with in the blood of persons suffering from blackwater fever, but that they stand in the position of cause and effect is not credited by the majority of observers. It is worthy of note that blackwater fever may occur for the first time, or may recur, in persons returning to a temperate climate after residence in a district where the disease prevails.

Dr. W. H. Crosse[2] estimates that although few Europeans in British Central Africa escape malaria, only about 10 per cent. get blackwater fever. Crosse recognises four leading clinical types: (1,) A paroxysmal form, in which daily recurrences of hæmoglobinuria take place;

(2,) A regular form, in which (usually for three days) the urine contains hæmoglobin; (3,) A typhoid type; and (4,) A suppression form (anuric).

Bastianelli[3] asserts that it is practically proved that hæmoglobinuria occurs only in infections with the æstivo-autumnal parasite. He sums up his belief in regard to malaria and quinine as etiological factors as follows: "The preceding malaria creates the fundamental disposition; the existing malaria the accidental disposition; the quinine the provacative agent."

Dr. R. M. Connolly[4] classifies hæmoglobinuria under three headings—the sthenic, the pernicious, and the insidious. Recovery is not to be expected in the insidious and pernicious varieties.

Koch[5] thinks, or at least did think, that hæmoglobinuria was not due to malaria at all, but was rather the result of quinine. This view has been strenuously opposed by almost every other observer, so much so that but little credence is given to Koch's statement.

TREATMENT.—Bastianelli[6] formulates the following rules for the administration of quinine in hæmoglobinuric fever: (1,) If parasites are present in the blood, quinine should always be given; (2,) Should hæmoglobinuria set in during a malarial attack, and if, on examination, it is found that there are no parasites in the blood, quinine, if it is being given, should be stopped, or if it has not already been given, it should be withheld; this step is advised because if quinine has already been given, the drug has destroyed all the parasites, or if it has not already been given, because the activity of the infection has ceased. In either case there is no longer necessity for the drug. If uselessly given there is the risk of its causing a hæmoglobinuria which, in its absence, might not have occurred; (3,) If hæmoglobinuria comes on during a malarial attack, and while quinine is being given, should parasites persist in the blood, the drug must be persevered with, notwithstanding any risk there may be of the drug aggravating the symptom.

Crosse recommends a **Cholagogue Purgative** and **Enema** to relieve constipation; **Sodium Bicarbonate** to allay gastric irritation; **Opium** to procure rest; and **Cardiac Stimulants** when necessary. After recovery, the patient ought to be advised to proceed to a temperate climate, and not return to the endemic seat of the disease, or not, at any rate, until the anæmia and cachexia are completely recovered from.

Lately, hæmoglobinuria has been reported by Drs. A. D. Humphrey and A. Powell[7] to occur in Assam.

REFERENCES.—[1] "Brit. Med. Journ.," Sept. 24, 1898; [2] Ibid., April

1, 1899; [3] "Annali di Medicina," Anno ii, Fasc. xi; [4] "Brit. Med. Journ.," Sept. 24, 1898; [5] "Treatment," March 10, 1898; [6] "Practitioner," Jan., 1899; [7] "Brit. Med. Journ.," April 1, 1899.

HÆMOPTYSIS.

Synopsis.—(Vol. 1899, pp. 304, 441 and 564). Senecio Aureus, drachm doses of fluid extract. Venesection, Nitro-glycerin, Chloral Hydrate (gr. 15 to 20 per rectum). Tracheal injections of Oil of Turpentine and Olive Oil, āā ℥j. Inject 4 drachms daily for three days.

HÆMORRHAGE.

Synopsis.—(Vol. 1899, pp. 33, 304). For hypodermic use in post partum cases: ℞ Ergotin, ℥ij; Chloral Hydrate, ℥ss; Distilled Water, q.s. ad ℥j. M. Sig.—Inject 10 or 20 ♏ deeply into muscles of buttock. Abel prefers Ergotinol, which on account of pain may be combined with morphia. A useful styptic: ℞ Pulverised Resin (common), ℥iv; Carbolic acid (95%), ℥iij; Chloroform, ℥ij. Plug wound with a rope of cotton wool dipped in the mixture. Senecio Aureus, drachm doses of fluid extract useful in hæmaturia, hæmoptysis and menorrhagia.

HÆMORRHAGE AFTER TOOTH EXTRACTION.

J. G. Turner, F.R.C.S., L.D.S.

Mr. Dolamore, dental surgeon to the London Hospital, advocates *suturing* together the flaps of gum in cases of hæmorrhage following extraction. This may be done with catgut, horse-hair, or any handy suturing material except silk. After the suturing, the patient should be made to sit for half an hour or so, with the mouth open and the head bent forward over a porringer to allow saliva and blood to dribble out of the mouth. If this be not done the patient will give way to the irresistible desire to clear the mouth by sucking the gum and spitting, thus disturbing the forming clot on which arrest of the hæmorrhage depends. In sewing the flaps it is not necessary to bring the edges together, *but to pass enough sutures to make a network, in the meshes of which the blood will congeal;* the clot thus formed fills in the sockets, and by its own pressure stops the hæmorrhage. It is well first to syringe out the sockets thoroughly, especially if first seen after other treatment has been tried; and it may be convenient to raise small flaps of gum on either side.

The writer can testify to the value of this plan in stopping venous oozing from the sockets, and would be inclined to try it even in hæmophilic cases. Its great merits are its simplicity and *cleanliness.*

In cases where the oozing comes from the lacerated surface of spongy gums, the preparation known as **Styptic Wool** is useful, and may be sufficient to arrest the hæmorrhage by itself.

Hæmorrhage after tooth extraction depends sometimes on the presence of small pieces of loosened tooth or bone, the movements of which constantly reopen small vessels in the bone or gums. Careful

exploration with a blunt probe should be made to ascertain the presence or absence of such causes; ocular inspection is generally impossible.

In a few cases it depends on partial laceration of a small artery in the muco-periosteum. Mr. Dolamore relates a case where the palatine artery was lacerated in extracting an upper molar, in which the hæmorrhage was arrested by the **Actual Cautery**; and the writer has seen bleeding from a small artery of the muco-periosteum of the mandible which was arrested by **Torsion** with artery forceps.

Cases of this kind arise when considerable violence has been used in the extraction of deeply buried stumps, the outer hard shell of the bone being broken by the forceps.

In any case, *plugs should be avoided, if possible.* They may arrest the hæmorrhage for a few days, but soon become foul and stinking, and require removal. As might be expected, the parts by this time being in a state of septic inflammation, on removal of the plugs bleeding recommences, and the case goes from bad to worse. If nothing else is available, a solid plug should be used, such as the tooth itself, wrapped in a little iodoform gauze to aid coagulation. Such a plug less readily gets foul.

Hæmorrhage after extraction is sometimes seen in cases of such general diseases as purpura, lucocythæmia, and other diseases of that class, and in elderly people in cases of Bright's disease. The best local treatment will then be the plan of **Suturing** already described.

Hæmorrhage after tooth extraction due to hæmophilia is a serious, though fortunately rare occurrence. In many cases the surgeon is told that the patient is a bleeder, but no satisfactory evidence of hæmophilia can be obtained on investigation. As mentioned above, the writer would be inclined to try Mr. Dolamore's method, should a case present itself, though Mr. Dolamore has as yet been unable to satisfy himself that any case treated by him has really been hæmophilic. Large doses of **Calcium Chloride** (gr. 60) might be tried at the same time.

Dr. Hubbard, of Chiswick, has recorded cases of undoubted hæmophilic bleeding which have ceased bleeding after injection by him of **Anti-diphtheritic Serum.**

HÆMORRHAGE (Post-partum). (See "Labour.")

HÆMORRHOIDS (Surgical Treatment of).

Samuel G. Gant, M.D., New York.

Archibald[1] reports a very interesting case of bleeding, internal hæmorrhoids in a little girl only eight years old. Her trouble dated

back five years previous to the time he saw her, when bleeding during and following defæcation was first noticed. It came on about a week after a fall from a gallery about twelve feet high. There were no serious immediate consequences of the fall. Blood came away usually with stools, but occasionally also in the intervals of defæcation. She frequently had griping pains during the act. The blood was variable in quantity and colour, but usually very dark. Examination under ether revealed several small distinct venous piles inside the anus surrounding the lumen of the bowel, not inflamed, but which bled freely when touched. She was discharged seven weeks after entering the hospital ; during the last three weeks of this time there was an absence of bleeding. She had no treatment beyond that of securing a free, soft stool every day. The patient was seen again several weeks after her discharge, and there had been only two recurrences of bleeding, slight on both occasions, and her general health was good.

Sims,[2] after criticising the older methods of operation for hæmorrhoids, describes his method as follows :—

(1,) Thoroughly prepare the patient for operation.

(2,) Then with the fingers divulse the sphincters in every direction.

(3,) Next, each tumour is seized, pulled well down, and held by an assistant.

(4,) With a scalpel the mucous membrane is then cut through around the base of the pile, and a silk ligature applied including all blood-vessels and connective tissue.

(5,) The tumour is then excised close to the ligature, and the cut edges of the mucosa joined by a continuous suture. If it be a very large pile a double thread is passed through it, and it is ligated in two sections.

(6,) External hæmorrhoids are treated in the same way, unless they are small and indurated, when they are cut off, bleeding arrested, and the edges of the wound brought together with interrupted sutures of silk.

The advantages claimed for this operation are : (*a*,) By leaving only closed wounds the danger of infection is greatly lessened ; (*b*,) Recovery is uninterrupted and speedy ; (*c*,) The danger of hæmorrhage is diminished ; (*d*,) Suffering is less after this than other operations for hæmorrhoids.

Jelks[3] reported three unusual cases where all the annoying symptoms of *prostatic enlargement* immediately disappeared after the removal of large and inflamed hæmorrhoids by the ligature. He is not aware of the extent to which this operation reduces the size of the prostate in a given case, if at all. He believes, however that in a

certain number benefit more or less permanent will be derived. At first there is an irritation, next inflammation, and finally enlargement of the prostate gland as a sequence of rectal disease. The cause is to be found in the intimate relation of the blood-vessels, nerves, and muscles of the rectum, prostate, urethra and bladder.

In a recent lecture Dr. Thomas H. Manly described his bloodless method of treating hæmorrhoids, and claimed the following advantages for it :—

(*a*,) It dispensed with the necessity of employing pulmonary anæsthesia, which many patients had a positive aversion to, and which, under various conditions of health, was not without danger.

(*b*,) It obviates the danger of hæmorrhage and sepsis, as the tissues are not divided by the scalpel.

(*c*,) Little time is lost in convalescence, many being about the day after the operation.

(*d*,) It dispenses with the need of assistants.

(*e*,) In properly selected cases it is an ideal method, and is permanent in its effects.

He did not advocate it as appropriate for all types of piles, as complicated cases called for more radical measures.

The technique was described as follows : The patient being thoroughly prepared for operation, the oiled index finger of the left hand is passed into the rectum, when four deep injections of cocaine are made into the tissues, and the anal verge sprayed. Next the sphincter is well dilated and the whole annular mass of tumours turned out. The piles are then cleansed with a carbolised solution, dried, and re-cocainised by direct application, and after absorption has deadened sensation each tumour is seized close to its base between the thumb and index finger of the right hand, and first put on a strain—**Tension ;** secondly, it is twisted completely around on its own axis—**Torsion ;** thirdly, the tumour is crushed to a pulp—**Compression** ; nothing remains except the outer muco-fibrous envelop. This accomplished, the whole traumatised mass is returned within the external sphincter, after having been irrigated. A suppository of opium is then introduced, after which a rectal pad is placed over the anus supported by a firm bandage. Inflammatory reaction and absorption of the core and hæmorrhagic detritus promptly followed. He said the sphincters were always highly painful unless the precaution was taken of frequently using the chloride of ethyl spray. Unless there was a special objection, he always administered alcohol internally before operating ; this moderated the shock attendant on full anal dilatation, and was moreover to be recom-

mended because alcohol is a well-known antidote of cocaine in susceptible individuals.

In a recent article on the treatment of hæmorrhoids Laplace[4] maintained that the **Clamp and Cautery** was the best operation at our command for the permanent cure of hæmorrhoids in general. He believes that there is less danger of infection and hæmorrhage following this operation than after either the ligature, crushing, injection, or Whitehead's operation. He gives the statistics of one hundred and seventy-five cases treated by this method during the past ten years without the slightest accident from hæmorrhage or sepsis. Of these one hundred and ten were males and sixty-five females ; their ages ranged from twenty-two to eighty. The number of tumours removed in the different cases ranged from one to six ; in ten the proportion of hæmorrhoidal tumours almost amounted to a prolapse of the rectum. Five cases were operated on after a 5 per cent. cocaine solution had been applied to the surface of the tumours and also injected around the sphincter, with the result that divulsion was almost painless, and the removal of the tumours by the clamp and cautery caused little pain. There was not a single instance where the operation was followed by a relapse.

Samuel G. Gant[5] criticises Whitehead's operation for hæmorrhoids as follows :- -

(1,) It is not suited for ordinary or bad cases of piles.

(2,) It is difficult and bloody.

(3,) Patients are detained in bed from six to fifteen days longer than after the clamp and cautery or ligature operations.

(4,) Owing to tension on the sutures, post-operative pains are severe and may continue for several days.

(5,) Infection is frequent and terminates in stitch or deep abscess and fistula.

(6,) Because of non-union, ulceration, stricture and pruritus are common sequelæ.

(7,) The portion of the bowel between the anus and the retracted gut loses its sensitiveness, and there is also an absence of the normal secretions.

(8,) The nervous and mental state of these sufferers is pitiable to behold, and many contract the morphine habit, others turn up as chronic invalids in some sanatorium or asylum.

Tuttle, in a lecture to his class at the Polyclinic, Sept. 15, 1899, said he had abandoned his modified Whitehead operation for the clamp and cautery method after operating on sixty cases, for the reasons that the former was bloody and difficult to perform, required

a longer time for recovery, and was followed by so many annoying sequelæ.

Dr. Skene [6] also criticised this operation, and said he had recently seen three cases of incurable incontinence following it where the sphincter had been removed. They were as perfect cases of incontinence as if there had been a complete rupture after labour. I have attempted two operations myself where the mucous membrane could not be separated from the muscle and were abandoned for more reliable operations.

REFERENCES.—[1] "Montreal Med. Journ.," vol. xxviii, p. 111, 1899; [2] "Maryland Med. Journ.," vol. xxxix, p. 531, 1898; [3] "Trans. Med. Soc." Tenn., p. 163, 1898; [4] "Med. Bull.," Phil., vol. xx, p. 171, 1898; [5] "Kansas Med. Index-Lancet," May, 1898; [6] "Brooklyn Med. Journ.," vol. xiii, p. 44–58, 1899.

HAY FEVER.

Synopsis.—(Vol. 1899, pp. 57 and 306). Orthoform has been applied locally. Diet and Hygeine, Iron, Quinine, Valerianate of Zinc, Fowler's Solution, Chloral Hydrate (2½ grs. frequently), or Atropine, (gr. $\frac{1}{100}$ hourly). Carlsbad Water as spray, followed by douche of 20 to 30% Silver Nitrate Solution, and afterwards apply: ℞ Menthol, grm. iij; Resorcin, grm. iij; Sp. Vin. Dil., grm. xiv. M. Or Mülier's Solution: ℞ Sodii Bisulphatis, 1 part; Aq. Dest., 500 parts. Or, ℞ Cocaine Hydrochlor., Thymol, āā gr. iij; Bismuth Subcarb., ʒij; Vaseline, ʒj. Apply on tampons; or insufflate powders: ℞ Pulv. Ac. Borici, gr. xxx; Sod. Salicyl., gr. xl; Quin. Hydrochlor., gr. iij. M. ft. pulv. ℞ Naphthalene Pulv., ʒvj; Ac. Borici, ʒvj; Camphor. Pulv. gr. xv; Ext. Violets, gr. xv; Ess. Roses, gr. xv. M. ft. pulv. ℞ Menthol, gr. vi; Bismuth Salicyl, Sugar of Milk, āā gr. lxv. M. ft. pulv.

HEADACHE.

Græme M. Hammond, M.D., New York.

One of the most comprehensive articles on this subject in the present year is that by Dr. Joseph Collins.[1] Those headaches accompanying the infectious diseases do not call for any particular treatment aside from the measures taken to combat the infectious processes, while the treatment of headaches due to the ingestion of vegetable or mineral poisons simply require the prevention of the further imbibition of the poison, be it tea, alcohol, tobacco, or poisonous substances, administered therapeutically or encountered in occupations, and the elimination of any poison remaining in the body. After that the headache disappears on the restoration of general, including neural, nutrition.

A formula Dr. Collins often uses as a general tonic and stimulant in headaches, following the infectious and exogenous intoxications, is as follows :—

℞ Opii Pulv. gr. ss | Zinci Phosphidi gr. ss
Make pil. No. xx One pill three times a day.

All the infections and intoxications produce a more or less profound condition of general anæmia. Early in the treatment of such headache some such tonic as the following should be administered :—

℞ Ferri et Ammonii Citratis, grs. xl		Syr. Zingiberis	ʒss
Liq. Potassii Arsenicalis	♏ xl	Inf. Calumbæ	ad ʒiv

Two teaspoonfuls after meals

He is especially apt to give this mixture to children who complain of headaches following the infectious diseases, while for adults the mistura ferri ammonii acetatis is substituted for the citrate salt.

In the treatment of headaches resulting from the absorption into the system of some endogenous poison, such as that of diabetes, uræmia, and the auto-intoxications and infections, the general measures to be adopted do not differ materially from those already spoken of. The headache is combatted when the formation of the poison and its absorption is interfered with. In this way diabetic headaches are treated by diet and by the utilisation of remedies against the anæmia and oligocythæmia, while uræmic headache is combatted by measures that prevent the formation of urea, and by those that facilitate its excretion.

In uræmic headaches accompanying chronic interstitial nephritis the following prescription is recommended :—

℞ Potassii Citratis	ʒij	Spt. Ætheris Nitrosi	℥ij
Tinct. Hyoscyami	ʒij	Inf. Scopariæ	ʒvj

Tablespoonful in water three times a day.

If it is necessary to increase vascular tension, infusion of digitalis may be added to this mixture.

Headaches arising from such intoxication as that of ammoniæmia require only local treatment of the cystitis and the institution of measures to combat the anæmia.

Headaches arising from auto-intoxication, the original source of the disease being stomachic and intestinal catarrh, functional perversion of the glands supplying the digestive juices, or through the activity of non-pathogenic bacteria, taken in from outside, form an important class, and one that is happily rather amenable to treatment. It must suffice in this connection to say that after the general measures for the regulation of the alimentary tract and its associated functional dependencies, such as the overcoming of constipation, the adoption of suitable diet in catarrhal conditions, the stimulation of the liver to the production of a suitable kind and amount of bile, the exhibition of substances that contribute to the restoration of the pancreas and spleen, the treatment consists in the administration of substances that

correct the apparent troubles of the digestion and of substances that quell the headache. The following is recommended :—

℞ Sodii Bicarb.		Liq. Ammonii Anisi	ʒij
Bismuthi Subgall.		Aquæ Dest.	ad ℥viij
Pulv. Acaciæ	āā ʒj		

Two teaspoonfuls before meals, repeated in three hours, if necessary.

In headaches associated with atonic dyspepsia, but without any considerable flatulency, and especially in the headaches occurring in women, the following is offered :—

℞ Ferri Sulphatis		Pulv. Rhei	
Quininæ Sulphatis,	āā grs. xv	Pulv. Zingiberis	āā grs. x
Sodii Arsenitis	gr. ss		

Pil. No. 12. One three times a day after meals.

The headaches that accompany organic disease of the heart, whether they be associated with excess or deficiency of propulsive power, naturally require treatment directed to that organ. Headaches occurring with functional disturbances of the heart are often amenable to therapeutic measures, not drugs. For instance, a heart that is working violently as the result of great physical effort or excitation of the mind or body, may be so quieted by the application of a simple **Cold Water Compress** to the cardiac region that the accompanying throbbing frontal headache disappears promptly, and the efficaciousness of stimulating foot baths and hot sitz baths in combatting a headache due to increased vascular tension within the skull, is very well known.

It is rarely necessary to administer the more powerful cardio-vascular depressants in cases of this kind, the required equalising of the circulation being obtained by hydric procedures and the administration of a few doses of the bromides.

When headache is an accompaniment of a sluggish circulation, there being no deficiency in the amount of the blood and no alteration of its constitution, the diffusible stimulants, **Caffeine** and **Strychnine,** may be relied upon to bring about its prompt relief. **Cannabis Indica** is a drug frequently used with good effect in this form of headache. It is given as follows :—

℞ Ext. Cannabis Indicæ, gr. $\frac{1}{3}$ to $\frac{1}{2}$	Ext. Gentianæ q.s.

Make one pill.

Headaches dependent upon general anæmia are oftentimes extremely resistant to treatment, and although temporary improvement often follows tonic and stimulating treatment, the anæmia must be fought unswervingly for a long time to effect a complete cure, and to stay the recurrence of the headache. These headaches are usually accompanied

by a very slightly sluggish condition of the digestive tract, to combat which he has used the following combination :—

℞ Quininæ Sulphatis		Pulv. Capsici	
Ext. Aloes Aq.	āā grs xij	Pulv. Ipecac.	āā grs. vj
		Glycerini	q.s.

Pil. No. xij. One pill at mid-day.

Or, if associated with considerable vital depression, he uses the following pill instead, giving at the same time some absorbable form of iron :—

℞ Ext. Nucis Vomicæ	gr. ss	Pulv. Capsici	gr. ¼
Pil. Rhei Comp.	gr. iij		

Make one pill. One pill at mid-day.

Naturally it is very often necessary to give at the same time, for its immediate effect, some analgesic, or a combination of these with a stimulant, such as caffeine, and such a prescription, containing caffeine, phenacetin, and salol, usually meets the requirements.

Vansant[2] directs attention to the treatment of headaches by **Forcible Syringing of the Nasal Accessory Sinuses with a Stream of Hot, Dry Air** (medicated in some instances), or nitrous oxide gas. He has found that frontal headaches especially are relieved by this method, although some of the patients had pain in the temples, vertex, or the entire head. The author asserts that the relief from headache, even of many years' duration, was so rapidly accomplished and so complete, as to be, in some instances, "positively startling." Thirteen cases are reported. In nearly all there was nasal obstruction of some kind. The forcible syringing of hot air into the accessory sinuses often caused a free serous discharge from the nostrils, which, however, did not last long.

REFERENCES.—[1] "Therap. Gaz." May 15, 1899; [2] "Laryngol." Aug. 1, 1898.

HEART (Diseases of). *Prof. Alfred H. Carter, M.D., F.R.C.P.*

Cardio-pulmonary Murmurs.—Among the various explanations which have from time to time been offered of inorganic heart murmurs, that which would attribute a considerable number of them to a pulmonary origin appears to be increasing in favour. The idea is by no means new. So far back as 1854, Wintrich drew attention to murmurs which he believed were due to aspiration of an adjacent pulmonary cavity, by diminution in the size of the heart during its systole. Again, in 1860, B. W. Richardson recorded three cases of a somewhat analogous kind. In 1863, Skoda specifically described murmurs, due to compression of a portion of lung by the heart during its excursion, and consequent expulsion of the contained air, with a

hissing sound. More recently, cardio-pulmonary murmurs have been thoroughly studied, and placed upon an experimental basis by Potain. A paper by Hoover,[1] discusses the whole question fully. According to him, the murmur may be produced either by compression or by aspiration of a portion of lung by movements of the heart. The former is by far the most common and is systolic in rhythm, while the latter is of diastolic rhythm. When systolic, the murmur may be distinctly palpable as a thrill. Among the features of such murmurs, he lays most stress upon their superficial character, their limitation to a sharply defined area, together with marked variation in intensity and quality according to the posture of the patient, and the particular phase of respiration. Thus they may be heard during deep inspiration, while absent or of diminished intensity during forced expiration; or *vice versâ*. Again, while present in the recumbent posture they may be absent in the erect posture, or *vice versâ*. The phenomenon is wholly independent of the respiratory act. The essentials for its production are: A certain volume of lung must be implicated; and the lung must occupy such a position relative to the heart and chest-wall, that the heart will have complete mastery over its excursions. The relations may be such that it may be produced at any point in the cardiac cycle, though the great majority of murmurs thus caused are either systolic or pre-systolic in rhythm. Their most common seats are over the conus arteriosus dexter (pulmono-arterial area), or over some point close to (but not as a rule exactly coinciding with) the apex beat.

Schroeder[2] also refers to the same subject in a paper upon inorganic murmurs, but would restrict the cardio-pulmonary theory within narrower limits than Hoover. For instance, he still adheres to the hæmic theory of Marshall Hall, in explanation of the common pulmono-arterial murmur of anæmia and chlorosis. Again, he says that, while occasionally heard at the base they are usually apical, and are always systolic in rhythm.

Squire[3] draws attention to cases exhibiting a systolic murmur, which he (upon strong grounds) regards as of cardio-pulmonary origin, and presenting the additional feature of audibility in the back as well as in front, at a point just below the angle of the left scapula, and sometimes in other situations. There can be no doubt as to the importance of rightly interpreting these cardio-pulmonary murmurs, especially in connection with examinations for life assurance, as they may be so easily confounded with organic disease, and lead to unfair rejection.

Webster,[4] in a paper on *Accidental Cardiac Murmurs*, draws the

following conclusions: (1.) Accidental heart murmurs might occur when there was neither anæmia nor fever, as in certain forms of intoxication; (2,) Accentuation of the pulmonic second sound might occur in accidental heart murmurs; (3,) The accidental murmur might be diastolic in rhythm; (4,) The term "accidental" should be employed to designate all those cardiac murmurs which could not, after careful examination, be clearly demonstrated to belong to the organic class, it being clearly understood that as our knowledge extended and increased, the number of "functional" maladies gradually diminished. The term "accidental" committed us to no theory of causation, indicated no pathology, avoided a discussion of the question whether functional disturbances occurred with pathological change, and, above all, it erected no barrier in the ways of progress; (5,) He inclined to the view that no single theory could be said reasonably to account for all accidental heart murmurs. He believed that there was a relative insufficiency of either the mitral or tricuspid valves, due to incomplete contraction of the heart, this latter being due to degeneration, fatigue, or to the effects of toxic agents, as in pyrexia, alcoholism, etc., and that under the circumstances the murmur might not vary in any of its essential characteristics, of quality, pitch, and intensity, or in point of maximum intensity and area of audibility, from regurgitation due to organic disease at the same orifice; (6,) The theory of Potain in regard to cardio-pulmonary murmurs seemed a possible explanation of some of the accidental murmurs; (7,) In all cases of organic disease the vibrations originating in fluid blood were due to the formation of fluid veins. The theory that the accidental murmurs originated in vibrations in the walls of the vessels or of the conus, and were not communicated to the moving column of fluid, and so were not carried by it, did not seem quite reasonable, but might serve to explain the limited area of audibility of some of these murmurs; (8,) The wide diversity of opinion in regard to rhythm, point of maximum intensity, and area of audibility would seem to indicate careful accurate observations improperly interpreted, or else an attempt to explain all accidental murmurs by one theory; (9,) In many cases, especially those of systolic murmurs at the apex or of those heard over the body of the heart, a correct diagnosis could not always be made without awaiting the results of treatment.

Mitral Stenosis.—Sansom,[5] in a post-graduate lecture upon mitral stenosis, emphasises the following points: (1,) That in a very large proportion of cases it is of rheumatic origin, and especially common in the more insidious and less recognisable forms of rheumatism; (2,) That, in later life, it may develop in connection with slowly developing

fibrous and granular kidney; (3,) That, while there is undoubtedly some kind of association between mitral stenosis and tuberculosis, there is no evidence that the cardiac lesion is of tubercular origin, but rather that tuberculosis in other parts may be favoured by a diminished power of resistance to the inroads of tubercle bacilli, due to defective supply of blood in the arterial system; (4,) That the absence of regurgitation in cases of pure stenosis is due to the sphincter-like action of the muscular bundles surrounding the root of the pulmonary artery; and (5,) That the characteristic alteration in the left auricle is not dilatation but hypertrophy, and that dilatation is probably introduced only with subsequent auricular breakdown. He regards the prognosis of mitral stenosis as grave, and says that in the rheumatic forms, life is rarely prolonged beyond 40 years of age—the average in his cases being 32·7 years.

Rheumatic Carditis in Children.—An interesting discussion was opened by Lees[6] upon rheumatic carditis in children, based upon one hundred and fifty fatal cases. While the mitral valve was implicated in every case but one, the damage was usually insignificant, and marked mitral regurgitation or stenosis was only observed in twenty cases. Aortic disease was still less frequent. On the other hand, marked evidence of pericarditis was found in 75 per cent. The pericardium was usually adherent, and only contained fluid in one-third of the cases. Dilatation was observed in ninety cases, in thirty-six of which it was "marked." From these figures, Lees gathers that pericarditis and dilatation are the main factors of danger in rheumatic heart disease of children. He considers that serious dilatation often occurs independently of pericarditis, and is due to a toxic action of the rheumatic poison on the cardiac muscle. He is strengthened in this opinion by the large proportion of cases in which other concurrent manifestations of fresh rheumatism are observed.

Heart Dilatation.—Graham[7] has drawn attention to the many circumstances in life which, acting upon the heart, produce greater or less dilatation. Among the most frequent are depressing mental emotions, which may produce their effects gradually or suddenly. The habits of a patient in the latter half of life are also a frequent cause. Over-eating and over-drinking, by distending the blood vessels give the heart an extra amount of work which may lead to dilatation and hypertrophy. Over-indulgence in alcoholic beverages, by producing arterial disease, and thus obstructing the circulation, tend to changes in the myocardium. The effect of tobacco is also marked. He is of opinion that very few who have used tobacco freely can continue the habit with impunity

long after the age of fifty. It is also probable that individuals who, in early life, have indulged in violent athletic exercises to such an extent as to cause hypertrophy will, in their later years, have dilatation from the fatty degeneration which so often follows such hypertrophied conditions. There are many diseases which assist in producing dilatation, Bright's, arterio-sclerosis, infectious diseases, typhoid, and la grippe The latter of late years has been the primary cause of a large number of cases. The treatment should consist in carefully regulated diet and regime, and suitable remedies, the most valuable being **Iodide of Potash, Strychnine, Digitalis, Strophanthus** and **Nitro-Glycerin.**

Heart Disease in Pregnancy and Child-bed.—Feis[8] has collected a good many facts relating to this subject. It appears that a moderate degree of hypertrophy of the heart is the rule in the later stages of pregnancy ; it varies in degree in different cases, but is of very little clinical importance. There seems to be no doubt however, as to the risk arising from the influence of pregnancy upon valvular disease, especially in mitral stenosis. The risk is one which increases with each successive pregnancy. It is not difficult to understand this. The tendency to cardiac hypertrophy during pregnancy even in those who are healthy, affords irrefutable evidence that the work which is demanded from the heart in this condition is in excess, and the strain of child-bearing in all its stages, upon the general health of the mother is of course a clinical commonplace. In these two facts—increased circulatory work, and impaired general health—we have all that is necessary to upset the balance of compensation in many cases of valvular disease, and thus to induce varying degrees of heart failure. In deciding whether a woman suffering from valvular disease may be permitted to marry, our judgment should turn mainly upon these points: (1,) Her general health and stamina ; (2,) The nature and extent of valvular trouble ; (3,) The completeness of compensation ; and (4,) Her social circumstances—as influencing the probable wear and tear of life, and her tendance.

Toxæmic Delirium.—Eichhorst[9] draws attention to a condition which he describes as toxæmic delirium, sometimes occurring during the rapid disappearance of cardiac œdema and cyanosis under treatment by powders containing **Digitalis** and **Diuretin.** The symptoms in question occur during diuresis, and are more likely to appear in old persons than in younger ones. The first thing noticed is usually somnolence, which may be so deep that it is difficult to arouse the patient. Soon the consciousness is disturbed ; the patients do not recognise their acquaintances or surroundings. Delirium then comes on, varying in degree up to violent mania. The respiration is often altered, being

deep and frequent, without evidence of obstruction. The face is red. Muscular spasm was not observed in any case. These symptoms last until the œdema is gone, and polyuria has been followed by normal excretion, and then cease gradually or suddenly. In no case was there albuminuria ; hence the author excludes ordinary uræmic poisoning, and attributes the symptoms to an intoxication from unknown bodies derived from the œdematous fluid and not excreted rapidly enough by the kidney. In no case was the condition actually dangerous.

Tracheal Tugging.—Various methods for eliciting this sign of aneurysm of the arch of the aorta have been suggested. It has been advised that the chin should be raised and the crico-thyroid region grasped between the thumb and forefinger with slight upward traction ; that the chin should be depressed and the same manœuvre executed, and that that region should be pulled somewhat to the left of the middle line. The last plan was suggested by Cardarelli, whose name Fraenkel[10] associates with Oliver's, and speaks of this sign as the Oliver-Cardarelli sign. Fraenkel himself suggests that the thyroid cartilage should be looked at sideways and its motion observed. For sufficient reasons this succeeds best in men. The possible danger of rupturing an aneurysm by too powerfully dragging on the trachea is pointed out by Fraenkel, and for this reason Cardarelli's lateral traction is preferred. While mentioning the possibility of intra-thoracic tumours adherent to the arch of the aorta being a possible cause of erroneous conclusion with this sign, Fraenkel pronounces strongly in favour of its general reliability as an aid in the diagnosis of aneurysm of the arch.

D. Newman[11] twelve years ago published a lecture to show that some cases of aortic and innominate aneurysms may give rise to laryngeal symptoms only, in most instances, of sufficiently characteristic nature to justify a positive diagnosis, or at least a stray suspicion of aneurysm. He now returns to the point in another paper[12]. He discusses three groups of symptoms : (1,) A sudden and paroxysmal dyspnœa accompanied by laryngeal stridor. The stridor is usually most marked during inspiration, expiration being free, but in rare cases expiration may be impeded. During the intervals between such attacks, the voice may be very little altered, and the laryngoscope reveals no abnormality—negative results of great diagnostic value ; (2,) A hoarse and imperfect cough without any proper initiatory explosion—called "bovine cough" by Dr. Wyllie, owing to its resemblance to the wheezy cough of a cow ; (3,) Alteration of voice. There is often but very little change because of compensation for the

defect in one vocal cord by increased action of the other. In other cases the voice is impure ; and owing to the force of air necessary to throw the cords into vibration, talking soon tires, and phonation becomes weaker or lost. From increased effort to talk loudly, the voice may break into a falsetto. Again, the voice may be lowered in register, hoarse, and muffled. The author adds many reflections on probable pathology of these symptoms, which are well worthy of study.

Early Diagnosis and Treatment of Aneurysm.—At the Medical Congress of 1899, held in Berlin, M. Schmidt introduced a discussion on this subject. He referred to the diagnostic value of two relatively new signs—tracheal tugging and examination under Röntgen rays. Tugging was best observed by slightly pushing upwards the cricoid cartilage with the first and second fingers of the right hand, while the patient's head was extended somewhat backwards. The differential diagnosis between solid tumour and aneurysm might still be very difficult in certain cases. A suspicion of aneurysm was most likely to be correct in males, between forty-five and sixty years of age, who had had syphilis. Virchow and others consider the influence of syphilis to be exaggerated, and regard laborious work and traumatic injury as more frequent and important factors. As to treatment he placed most reliance upon full doses of **Potassic Iodide** internally, Tuffnell **Low Diet,** and **Absolute Rest,** steadily persisted with for at least eight weeks and then gradually relaxed. Of local measures he regarded electrolysis as the best means of promoting coagulation in the sac.

Life Assurance.—An instructive discussion on the prognosis of cardiac disease in its relation to life assurance was introduced by Prof. Gairdner,[13] at Edinburgh last year, but it cannot be said to shed much new light upon the way of dealing with such cases in actual practice. At present, in the opinion of the writer, we cannot get further than this. Accurate physical examination is the first necessity. The results have to be interpreted in the light of family history, previous personal history, and absence or presence of symptoms. The case can then be referred to one of three groups: (1,) Those in which the signs of trouble are so slight and insignificant that we have no hesitation in passing them as insurable ; (2,) Those in which the evidences of organic disease are unmistakable, and must consequently be rejected, in spite of records of occasional survival up to or beyond the usual term of life ; and (3,) Cases in which we are in doubt. The last class should be deferred for further and repeated examination. If the signs disappear, the case may be passed with approval, provided the general health is

good in all other particulars. If they persist, the risk must be pointed out to the Assurance Society, and either the latter must be left to accept the life on their own responsibility and at their own terms, or the case must be rejected. From a purely business point of view, in the present state of our knowledge, the latter is the wiser course.

Theodore Williams[14] formulates the following statements for the guidance of medical examiners in life assurance :—

(1,) *Cases of adherent pericardium*, provided there are no valvular lesions, that the muscular walls are sound, that there is no cardiac dilatation, and that the adhesions are not to the chest wall itself, may be accepted with a moderate addition of from three to five years.

(2,) *Mitral regurgitation* cases, where the origin is not degenerative and the compensation is good, and where there is no dyspnœa or complication, can be accepted with an addition of from five to ten years, according to the age of the candidate.

(3,) *Cases of mitral stenosis* are less favourable, being liable to cerebral embolism, and can only be accepted if the disease is not progressive, if there is no accentuation of the second sound, no enlargement of the right side from either dilatation or hypertrophy, and no dyspnœa. They can then be accepted on less favourable terms than cases of mitral regurgitation. Double mitral lesions, however, can only be considered with very large additions.

(4,) *Aortic valvular disease*, whether regurgitant or obstructive, can not, as a rule, be admitted into the category of assurable lives; though favourable instances, where the lesions originate in rheumatic endocarditis and the compensation is complete, have been occasionally accepted with large extras.

(5,) *Cases of cardiac dilatation*, without compensation, can not, as a rule, be accepted at all, except when the dilatation is of a temporary nature, such as may follow over-exertion and over-smoking, but even here the case can not be considered until all dilatation has subsided.

(6,) *Cases of cardiac hypertrophy* must be estimated with reference to the modes of causation, and no definite rule can be laid down, though lives where the lesion giving rise to the hypertrophy is not progressive, the muscular wall in a sound condition, the compensation complete, and the vessels healthy, may be regarded as within the pale of life assurance ; as, for instance, athletes who have given up sports, and women whose cardiac hypertrophy originated in frequent pregnancies, but are now past child-bearing. Here the lives may be accepted with an extra, varying with the age.

(7,) *All forms of degeneration of the cardiac walls*, fibroid and

fatty, must be excluded, and vigilant watch kept against their admission.

(8,) *All forms of cardiac neurosis* are not equally dangerous, but they are too uncertain in their clinical life history to allow of being admitted among the assured.

Davis,[15] in an analysis of two hundred and fifty cases in his own practice, states that, contrary to popular opinion, sudden death in heart disease was comparatively rare. It occurred in aortic regurgitation only, and, according to Broadbent, in about one-fourth of the cases. Of thirty fatal cases of which he had records, the age at death had been fifty years for mitral stenosis, forty for mitral insufficiency, and thirty-six for both aortic stenosis and insufficiency combined. Chronic valvular disease of rheumatic origin must be commonly regarded as intermittently progressive. The prognosis was influenced by the amount of hypertrophy already present, by habits of life, and by general nutrition. In one hundred and three cases, in which the duration of broken compensation could be ascertained, the average duration had been 2·6 years in mitral insufficiency, and the maximum seventeen years; in aortic stenosis the average had been 3·8 years, with a maximum of twenty years: in aortic insufficiency the average had been 2·75 years, with a maximum of seven years. In general, those having stenosis of the aortic valves lived longer than those having insufficiency.

Pathology of Endocarditis.—Dessy[16] records the results of thirty-six cases of endocarditis studied by bacteriological methods. In thirty-four cases the results were positive, and from an analysis of them the author concludes that: (1,) The diplococcus and the streptococcus are the most constant agents in endocarditis; (2,) That these are able to produce, whether alone or associated with other micro-organisms, the ulcerated as well as the verrucose form; (3,) That the diplococcus more frequently causes aortic, and the streptococcus mitral, endocarditis.

In relation to the possibility of *Ulcerative Endocarditis arising from Gonorrhœal Infection*, Thayer and Lazear[17] conclude that general septicæmia with its usual symptoms and sequels may be set up by an acute gonorrhœal urethritis, and that gonorrhœa does occasionally set up endocarditis.

THERAPEUTICS.—In a recent issue of the "Journal of the American Medical Association," Houghton has a suggestive paper on this subject, in which he records inoculation experiments, designed to assay and standardise **Digitalis** and **Strophanthus** preparations. It is too long and technical to abstract in this place, but the important

practical point is that preparations of these drugs (especially of strophanthus), obtained from various firms of excellent repute differed widely in their toxic strength. For instance, as regards the tincture of strophanthus, the maximum toxicity was more than three times that of the minimum ; and one sample of strophanthin was no less than ninety times as powerful as another—with all intermediate grades. Under these circumstances, it is obvious that serious results might easily occur in changing the source from which such preparations are obtained in any given case—especially in regard to their isolated active principles.

Contrary to generally accepted notions, Beates [18] speaks in very confident terms of the value of Merck's German **Digitalin** in the treatment of certain vaso-motor and cardiac lesions of senility. He says that the symptoms associated with what is known as the "senile heart," such as increased frequency of pulse-rate, dyspnœa, œdema of ankles, giddiness, somnolence, forgetfulness, confusion of speech, etc., are associated with diminished arterial tension, and venous overfulness. Under these conditions, the *persistent* use of digitalin in doses varying from $\frac{1}{10}$ to $\frac{1}{2}$ grain, thrice daily, is attended, according to his observations, with marked benefit.

No important additions have been made to our therapeutic resources during the past year in connection with cardio-vascular disease. The value of **Graduated Exercise** and **Aerated Saline Baths** in properly selected cases is gradually being established on a sounder basis, and is shaking off some of the extravagances of its earlier adherents. In its essential forms the treatment is available everywhere, and it is the duty of every practitioner to make himself acquainted with its technique and the indications for its adoption. Dr. Satterthwaite [19] contributes an instructive paper on the subject.

Cautru [20] presented a paper to the French Academy of Medicine, in which he arrives at the following conclusions: (1,) **Abdominal Massage** has undoubtedly a diuretic action, whether it be employed alone or in conjunction with general massage and Swedish movement. In certain cases, however, the combination of these methods gives more prompt, more durable, and more complete results; (2,) In cardiac patients diuresis is rapidly induced, especially in those who are subjects of subcutaneous or visceral œdema ; sometimes from the first day, but usually toward the third day of massage, the author has seen the amount of urine increased from 250 grammes to 3000 or 3500 ; (3,) The general condition improves as the circulation becomes more regular, and the composition of the urine becomes more normal; (4,) Massage and Swedish movement can, by various manœuvres,

produce at will an augmentation or diminution of pressure at the level of the heart and vessels. They can, therefore, to some extent, be used to restore thereto their lost elasticity in chronic cardio-vascular affections, and must be regarded as the best preventive remedy against arterio-sclerosis in those of arthritic tendencies; (5,) Massage does not prevent the continued employment of any medicaments previously used. It will aid them, or can be alternated with them, or replace them when they are no longer efficient. It is an additional method of treatment. At the same time, it deserves preference because of its harmlessness when it is employed in a methodical manner, and for this reason especially, that it is a natural procedure, a truly physiological therapeutic measure.

Digestion and Heart Disease.— At a recent meeting of the American Medical Association, Badcock[21] referred to the vicious circle established between digestion and heart disease. Venous stasis of stomach, intestines, pancreas, gall ducts, and liver intensified the difficulties of nourishment under these conditions. Not only was digestion impaired, but the glycogenic, urea-forming, and protective functions of the liver, were added to the problem. Anæmia was thus added, also uric acid accumulation in the system, and deficient general oxidation. Two classes of cases were to be considered: (*a*,) Those in which compensation was present; (*b*,) Those in which compensation was lessened or lost. In the second class the dietary must be restricted. The "gone" feeling and thirst in these cases were no indication for food. Food should not be given too often, but at intervals of five or six hours. The stomach was to be spared, and the symptoms would improve. If necessary, **Somatose, Nutrose,** or even **Nutrient Enemata** might be given. Hot water before meals was useful. The amount of fluid taken with meals should be restricted. In the presence of œdema it should be reduced to a minimum. This included milk also. Starch, sugars, and fats were bad, owing to their tendency to cause flatulency and post-prandial pressure. Proteids were best. Apples, peas, beans, meats, oysters, were all good. When nephritis complicated it, milk was to be used; when arteriosclerosis, no food containing much calcium salts should be taken.

The treatment of high degrees of *Cardiac Dropsy* not yielding to ordinary remedies is beset with considerable difficulty. Borgherini[22] has modified an old method of dealing with such cases. After carefully cleansing the legs as if for a surgical operation, four incisions are made in each limb, one at each side of the malleoli and two in the calf. Each incision is two or three centimètres long and reaches the

subcutaneous tissues. The wounds are covered with aseptic gauze and a thick layer of absorbent cotton, and over this a sheet of rubber and bandage. The rubber is applied so that a small part of the heel is uncovered. The patient sits on the edge of the bed or on a chair with the feet down, and the fluid drains away into a basin under the uncovered part of the heel. The dressings on the limb are changed every twenty-four hours. The duration of the treatment varied from twelve to eighteen days, and after the fluid had drained off the wounds healed readily. A remarkably large quantity of fluid sometimes escapes and the method is applicable for renal as well as cardiac dropsy.

Fatty Heart.—Pliquet[23] discusses the treatment of fatty heart. In fatty infiltration, in the obese, he regards a course of **Thyroid Extract** as beneficial in many cases ; and, when the patient is accustomed to this medication, moderate exercise is permissible. In *true* fatty degeneration, he extols the value of **Spartein**, especially because of its long sustained influence upon the heart. It may be given by the mouth in doses of 20 to 30 drops of a 1 per cent. solution, three times a day ; or the following prescription :—

℞ Extract of Spartein grs. viij | Extract of Cinchona grs. xij
Make into 20 pills, and give 2 to 4 a day.

Treatment of Ulcerative Endocarditis by Anti-streptococcic Serum.—The success of serum-therapy in certain diseases has encouraged the hope that it might be successfully applied to the treatment of ulcerative endocarditis. The results have not been very satisfactory thus far. Some failures have been ascribed to the dependence of the affection upon microbes other than streptococci from which the serum has been derived. An interesting case in this connection has been published by Rogers[24] of a boy æt. ten suffering from ulcerative endocarditis (diagnosis afterwards confirmed by necropsy), whose blood gave pure cultures of streptococci. In the course of nine days five injections of 10 c.c. of anti-streptococcic serum were made. "The effect was absolutely *nil* as regards improvement." The report of the case will repay careful perusal. There is no doubt that the good effect of the serum in these cases has yet to be proved.

Angina Pectoris.—An abstract of a paper by Lyon,[25] includes the following useful remarks on treatment between the intervals of attacks of angina pectoris. Care should be taken that exercise does not immediately follow a meal, and that sudden motions are avoided. Mild exercise should be taken, but cold baths are not advisable. Smoking should be refrained from. Massage and friction of the right chest with alcoholic liquids may be resorted to. In regard to the diet, the

patient should refrain from all rich dishes and fermented drinks, and tea, coffee, and alcohol, and should live largely upon milk, eggs, green vegetables, and properly cooked fresh meats. Water should be taken at each meal. For two or three weeks out of every month 30 or 40 grains of **Iodide of Potassium** should be taken a day, and for the remaining days of the month $\frac{1}{100}$ of a grain of **Nitro-glycerin** may be similarly taken. Sometimes it is wise to increase the dose of the latter drug.

Paracentesis Pericardii.—Girandeau [26] advises that, when once the diagnosis of a large pericardial effusion (half a pint upwards) has been made, no time should be lost over treatment by drugs, blisters, and the like, but immediate **Paracentesis** should be practised. Among the signs of a large effusion, he mentions tympanitic resonance at the left base behind; impaired resonance may take its place, but is uncommon. If this sign is present, tapping is called for; if not, it can be postponed. A pericardial rub is no contraindication, but a sign that the heart is not bound down by adhesions. He insists (in opposition to Brentano), that tapping should always be preferred to incision, which should be used only when the former fails. This applies even to purulent effusions, which are occasionally cured by tapping alone, the only exceptions requiring immediate incision being putrid effusions. If a trocar is used, it is well to puncture the skin with a knife first; it should be inserted obliquely, as nearly parallel to the surface of the heart as possible. The author always taps at the seat of election in the fourth or fifth intercostal space about two inches to the left of the sternum (a point close to the sternal end of the space is probably safer.—A.H.C.), though it is certain that the two layers of the left pleura are frequently perforated. Theoretically, pneumothorax might result, but has never been recorded, and, though empyema or even pneumonia have been known to follow, they are very rare accidents. The heart has been wounded, occasionally fatally, but this accident is unlikely if an exploring syringe is inserted before the trocar. Tapping may be repeated as often as necessary, especially in rheumatic cases, where the effusion may eventually disappear. If the fluid is purulent and re-collects after one tapping, incision and drainage are indicated. Whatever the nature of the fluid, the immediate object and result of tapping is to relieve the most urgent symptoms. Permanent cure may follow, as in rheumatic cases, but the cure is more apparent than real, adherent pericardium, fibroid mediastinitis, etc., being sequelæ.

Morphia in Cardiac Disease.—It is quite certain that many cases of cardiac disease which derives no benefit from digitalis, strychnia, and

such-like heart-tonics are greatly relieved—sometimes to the extent of a re-establishment of an effective compensation—by the timely resort to **Morphia.** It is also certain that many are deterred from so using the drug owing to an *a priori* prejudice, especially if the urine happen to be scanty and contain albumin. Caution is necessary no doubt, and the reckless use of the drug in full doses can only be condemned. Its exact *modus operandi* is difficult to state, but in general terms it is due to soothing and sedative effects upon irritable conditions of the cardio-vascular nervous mechanism which interfere with its work, and to a general calmative effect upon the whole nervous system. Toogood [27] reports five instructive cases bearing upon this matter.

McPhedran[28] in discussing the principles of treatment in cardiac disease, emphasises the value of **Opiates** under certain conditions, a fact which is sometimes overlooked. In advanced cardiac disease, especially after repeated failures, complete rest of body and mind, aided by free administration of cardiac stimulants and tonics and the judicious use of purgatives, often fails to give relief. The signs of cardiac incompetency increase; there is increasing dropsy and dyspnœa with insomnia. The rest of the body is not sufficient to bring the needed rest to the heart; it remains irritable; its action becomes increasingly irregular. The patient grows weaker, the paroxysmal dyspnœa increases. Almost as soon as he falls asleep a severe attack of dyspnœa causes him to awake and sit up in bed. The distress from the dyspnœa is great, but that from want of sleep is greater. Such a condition is rarely benefited by the freest possible use of digitalis or other cardiac tonics and general stimulants. If the dyspnœa is not due in part to effusion into the pleura and œdema of the lungs—a dyspnœa that is persistent and not paroxysmal as cardiac dyspnœa is—there is no remedy so effective in such a condition as **Morphine.** The comfort afforded by a hypodermic injection is almost incredible. Given by the stomach it often fails even in much larger doses, because absorption is so slow, on account of the venous stasis in the mucous membranes of the stomach as well as of other parts, caused by the impeded circulation.

Semple[29] publishes the report of a well-marked case of *Graves's Disease* successfully treated, after eighteen months of treatment by other means without benefit, by **Continuous Rest,** an **Exclusive Skim-milk Diet,** and a course of **Baths** according to the Nauheim method. At first the patient was merely sponged with water at 95° prepared according to Schott's weaker formula; then full baths were employed, and later on effervescent baths of full strength. The only drugs used were **Lactate of Iron** and **Iodide of Potassium,** and **Strophanthus.**

Zangger[30] calls attention to *the Danger of High Altitudes for those affected with Arterio-sclerosis* arising from strain upon heart and vessels. Even with healthy heart and vessels, disturbance of the circulation often occurs sufficiently to cause dizziness, tinnitus, palpitation, insomnia, and general malaise on sudden change from a low to high altitude. Under similar conditions the subjects of arterio-sclerosis may suffer from collapse of the heart, angina pectoris, cardiac asthma, or apoplexy, and he quotes cases. He points out that these troubles are sometimes deferred until just after return to the lowlands, and suggests that patients thus affected should not in any case exceed an elevation of four thousand feet, and that a limit of three thousand feet is safer. Such caution is especially necessary in regard to the great and rapid changes of altitudes now attainable by mountain railways.

REFERENCES.—[1] "New York Med. Journ.," April 6, 1898; [2] Ibid., Aug. 13, 1898; [3] "Brit. Med. Journ.," Dec. 16, 1898; [4] "Med. Rec.," June 10, 1899; [5] "Brit. Med. Journ.," June 25, 1898; [6] Ibid., Oct. 15, 1898; [7] "Canadian Med. Rev.," Mar., 1898; [8] "Samml. klin. Vortr. (Volkman's)," June, 1898; [9] "Deut. med. Woch.," June 23, 1898; [10] Ibid., Jan. 5, 1899; [11] "Brit. Med. Journ.," July 2, 1887; [12] "Glasgow Med. Journ.," Aug., 1898; [13] "Brit. Med. Journ.," Sept. 17, 1898; [14] "Med. Exam.," July, 1898; [15] "Med. Rec.," May 18, 1899; [16] "Lo Sperimentale," anno 52, fasc. 1; [17] "Journ. Exp. Med.," Jan., 1899; [18] "Brit. Med Journ.," July 30, 1898; [19] "Therap. Gaz.," Nov. 15, 1898; [20] "Post Graduate," 1898, No. 6, p. 437; [21] "Gaz. hebd. de méd. et de chir.," May 15, 1898: [22] "Deut. Arch. klin. Med.," Bd. 61, 624; [23] "La Presse méd.," No. 7, 1897; [24] "Lancet," June 10, 1899; [25] "Therap. Gaz.," Oct. 15, 1898; [26] "Sem. méd.," Sep. 14, 1898; [27] "Lancet," Nov. 26, 1898; [28] "Canadian Pract.," May. 1898; [29] "Bristol Med. Chir. Journ.," June, 1898; [30] "Lancet," June 17, 1899.

HEPATIC ABSCESS. (See "Supra-Hepatic Abscess.")

HERNIA (Inguinal in Children). *Priestley Leech, M.D., F.R.C.S.*

McAdam Eccles,[1] in an article on this subject, says that improper diet leading to gastro-enteritis, diarrhœa, distension of bowels with gas, producing increased abdominal distension, is the main factor at work in the causation of hernia in children. Phimosis is seldom if ever an exciting cause of hernia in children, and circumcision will not cure a hernia. He disapproves of the wool truss and strongly recommends a spring truss, which should be worn night and day for three years; the truss should be used at the earliest possible moment. An operation for radical cure is indicated in only a minority of cases, and should be undertaken in the following conditions: (1,) Where a child is properly fed, but the hernia is not retained after a fair trial with a suitable truss; (2,) Where part of the contents of the sac are irredu-

cible ; (3,) Where a truss has been worn three years with no apparent cure of the protrusion ; (4,) Where a child has reached the age of three years and never worn a truss ; (5,) When herniotomy is performed for strangulation.

Bull and Coley[2] advise operation in children in : (*a*,) Cases over four years of age in which a truss has been given a fair trial without marked improvement ; (*b*,) Cases complicated by fluid in the hernial sac (reducible hydrocele) ; (*c*,) Irreducible herniæ (rare in children) ; (*d*,) Femoral herniæ in children, which, though rare, cannot be cured by trusses. Umbilical hernia should, with rare exceptions, never be operated upon in children.

Langton[3] read a paper on this subject at the annual meeting of the British Medical Association. He condemned the use of the skein wool truss, but said that the number of cases in which trusses failed to efficiently retain difficult herniæ could be counted on one's fingers. He advises a spring truss covered with soft indiarubber for infants, and the majority will not need operation if properly looked after and provided with a properly fitted truss. The length of time a truss should be worn is as follows : If the protrusion occurs before one year old, retain until the child is at least four ; if not worn until the child is three or four wear until ten years of age ; if not worn until the age of seven wear until puberty. He thinks circumcision neither prevents nor cures hernia, and that the cases requiring operation in children are comparatively rare and should not be done in infancy. He recommends operation in cases of irreducible omentum, irreducible omentum with fluid in the sac, in congenital hydrocele, in operations for strangulated hernia, in cases of fluid in the sac of a hernia, in all cases where it is impossible to efficiently retain the hernia by mechanical appliances. In early infancy the result of the operative cure for inguinal hernia often results in one of the most intractable forms of heruia—a traumatic vertical extrusion.

REFERENCES.—[1]"Brit. Med. Journ.," May 13, 1899, p. 1146; [2]"Ann. Surg.," Nov., 1898 ; [3]" Brit. Med. Journ.," Aug. 19, 1899.

HERNIA (Radical Cure of). *Priestley Leech, M.D., F.R.C.S.*

Bayer[1] draws attention to a source of danger in this operation ; a man had an attack ascribed to hæmorrhagic infarction of the lung, attributed by Bayer to partial thrombosis of the spermatic plexus of veins set up in dissection of the hernial sac. Wheeler,[2] of Dublin, recommends Kocher's operation. He says it prevents a peritoneal pouch or depression and cannot create an infundibulum ; the aponeurosis of the external oblique remains intact ; thus there is no cicatrix

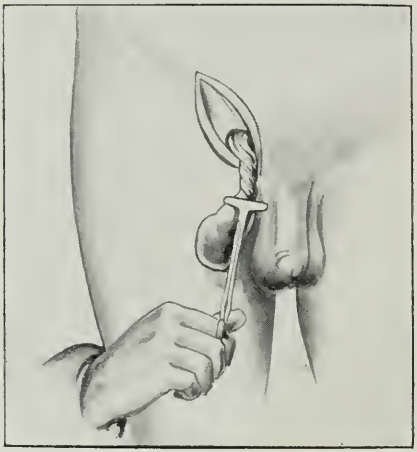

Fig. A.

Torsion of sac.

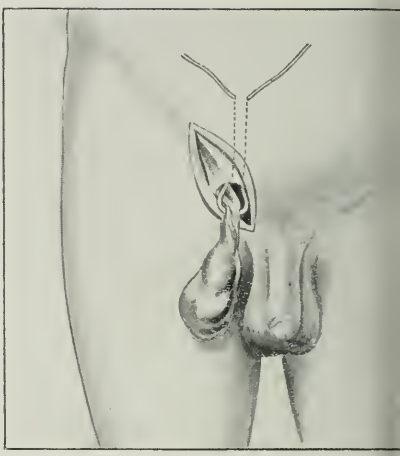

Fig. B.

Restraining suture *in situ* round twisted neck, but not as yet drawn tight.

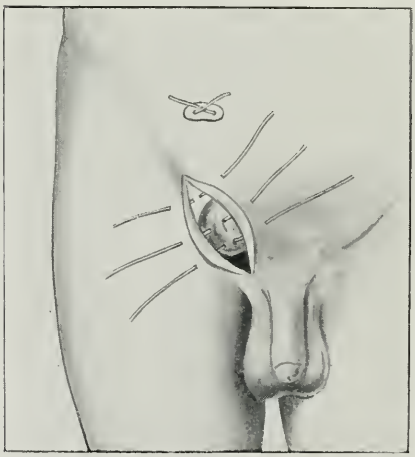

Fig C.

Restraining suture closed over lead plate Deep sutures placed in position.

Fig. D.

Diagram of peritoneal surface round opening after torsion of sac.

that can yield or stretch, and the operation is simple and rapid. He has also used it in strangulated herniæ.

Ball,[3] of Dublin, reports further on his method of radical cure by twisting the sac. Since 1893 he has operated on seventy-four cases by this method—five were femoral, one umbilical, and the rest inguinal; so far as he has known, there have only been two cases of recurrence. Umbilical hernia is, as a rule, unsuitable for this method, as the numerous diverticula of the sac prevents satisfactory isolation. The steps of the operation are as follows: The incision, an inch long, is made over the neck of the sac and carried down until the sac is opened, the finger introduced to examine for adherent omentum clot. After separation and reduction of bowel, etc., if needed, the sac is isolated and cleared up the entire length of the inguinal canal; the sac is then caught in a T-shaped forceps and slowly twisted, the finger of the left hand freeing the peritoneum from around the internal ring at the same time; the twisting should be done until it is tolerably tight, but if undue force is used necrosis of the sac may follow. The finger is then passed up for an inch in the sub-peritoneal tissue and a large curved needle threaded with a stout piece of silk passed beside the finger and then directly forwards through the musculature and skin of the abdominal wall. The other end of the same piece of silk is passed in the same manner on the other side of the twisted sac through the abdominal wall at the same level and close to the first end (*see Plate XIV, Figs. A, B, C, D*); by drawing on the two ends of the silk the sac is pulled up in the sub-peritoneal tissue at the back of the abdominal wall. It is fixed there by tying the two ends over a lead plate. If the sac is of moderate size the fundus now lies in the inguinal canal, and together with the cord is pressed firmly backwards towards the abdominal cavity, while deep sutures are passed taking good hold of the lateral structures of the canal and also picking up the twisted sac as it lies on the cord. These sutures are also closed over lead plates, and are removed after nine or ten days. The skin wound is closed by a fine continuous suture. If the sac is a large one a portion may be removed.

W. J. Mayo[4] says an occasional suppuration from infection from the skin cannot be avoided, and thinks that as a rule the patient's skin is over prepared. He prepares the skin of the area of operation on the morning of operation by a careful scrubbing with soap and water, gauze being used in place of a brush; it is then shaved and covered in the usual manner. The scrubbing is repeated on the operating table with the addition of turpentine if the skin is oily, and followed again by soap and water, and the wound site is then hardened

with alcohol. The peritoneum cannot hold back a hernia, and the object is to prevent this membrane insinuating itself between the muscular and aponeurotic layers and preventing the union of the real retentive agents. He thinks Bassini's operation does this. He has ceased to use kangaroo tendon for this operation and uses catgut sterilised by the Boeckman dry heat method, and is well satisfied with the results. The relapse is usually a direct protrusion and does not follow the cord. In relapses (four cases) he has used the following method: The external oblique fascia is divided to a point above the internal ring, and the outer flap is loosened to expose the under surface of Poupart's ligament. The peritoneal sac is encircled by a purse-string suture, and either cut away or reduced and the suture tied. All of the tissues except the skin and superficial fascia are sutured over the cord to the under surface of Poupart's, and the external flap of the external oblique is overlapped and held by an extra row of sutures. In femoral hernia he uses three super-imposed circular purse-string sutures of catgut, the first at the internal femoral opening, the second one-third of an inch outside this, and the third at the external surface of the canal. For some very large hernias this method is not suitable, and for these cases he divides the external face of the femoral ring outwards and upwards separating the iliac portion of the fascia lata from Poupart's, then passing a series of mattress sutures through Poupart's ligament one inch back of its lower margin and catching the pectineus fascia with the inner sutures and the iliac portion of the fascia lata with the outer sutures near its cut edge; drawing these sutures tight, slide the lower fascia under Poupart's ligament; the latter acts as a flap and can be sutured by its lower margin to the tissues below. In umbilical hernia where the recti-muscles cannot be drawn together he has used the flap method with good results. If the patient be laid upon the table and then requested to rise, the action of the recti will clearly show their position and indicate the feasibility of attempting to draw them together in the median line. If they cannot be drawn together he freely removes the umbilicus and attached sac, cuts the ring upwards and downwards an inch or more, and clears the aponeurotic structures on each side for at least two inches. Mattress sutures of silver wire are introduced an inch to an inch and a half from the margin of the aponeurosis on one side and one-fourth of an inch from the margin on the opposite side; when these are tightened it draws one side beneath the other, the overlapping edge being sutured to the surface of the opposite aponeurosis. As no sacrifice of tissue has been made the overlapping is readily done. Out of two hundred and four cases operated on by him and his brother one

hundred and sixty-four were inguinal with five known relapses; sixteen cases femoral with no known relapse; seven umbilical with one relapse; eight ventral, no known relapse; nine post-operative with one known relapse. Three only died—one from external wound infection, one from broncho-pneumonia in the second week (the wound healed by primary union), and one from uræmia. Otherwise there have been no deaths in non-gangrenous hernia.

Bull and Coley[5] have a valuable paper on this subject. They have ceased using silk for buried sutures as it is liable to cause sinuses and suppuration. From Dec. 12, 1895, to Sept. 20, 1898, four hundred operations were performed for the radical cure of inguinal and femoral hernia. The total mortality is three (less than 1 per cent.); the causes of death were double pneumonia from ether on the sixth day; acute peritonitis from wound infection; pericarditis with pneumonia complicated with wound infection in a very weakly child with spinal disease. Bassini's method was used in three hundred and forty-two cases with kangaroo tendon: with silk suture, one case; wound healing primary union, three hundred and seventy-three cases; slight suppuration, fifteen cases; much suppuration, nine cases; relapsed, three cases (Bassini's). The chief dangers to be guarded against are pneumonia and wound infection, and they believe the former to be more dangerous. Results of bacteriological tests as to sterility of skin and fingers of operators are given, and they agree with Mikulicz "That the danger of infecting the wound increases with the length of the operation."

Chromicised Kangaroo Tendon is employed for the deep sutures, fine catgut for ligatures of arteries and for closing the skin incision. The catgut is prepared by boiling in absolute alcohol, under pressure, at a temperature of 210° F. The dressings in most cases have been pads of **Iodoform Gauze** and **Moist Bichloride Gauze** (1 in 5000). A firm spica bandage is applied, and over this a plaster-of-Paris spica extending from the knee to the free border of the ribs. The plaster spica insures perfect rest for the wound, and, the authors believe, materially aids primary union which has been obtained in 95·5 per cent. of the cases. The fear of atrophy of the testicle in Bassini's operation is groundless. Bassini's method was also used in inguinal hernia in females. In femoral hernia Bassini's method was used, but the following method gave equally good results and is simpler: It consists of high ligation of the sac and closure of the femoral canal by a purse-string suture; this suture is introduced first through Poupart's ligament—the outer part which forms the roof of the crural canal, then through the pectineal fascia and muscle, the fascia lata

over the femoral vessels, and, lastly, again upward through Poupart's ligament, coming out about one-fourth to three-eighths of an inch from the point of entrance. This brings the floor of the canal in contact with the roof, and completely closes the opening. It is very important to thoroughly free the sac before applying the ligature in order that the stump may slip back into the abdominal cavity when cut off. They think it is not recognised that the results in femoral hernia are so nearly perfect. In umbilical and ventral hernia the results have been disappointing. While relapses occurred in the majority of cases, the condition was generally much improved over that prior to operation, and a support could be worn with a fair degree of comfort.

The results of operation in *Epigastric hernia* and in *Hernia following appendicitis* have been very satisfactory. The method of operation has been free excision of all the cicatricial tissue, careful dissection and exposure of the internal and external oblique muscular planes, with suture in separate layers with kangaroo tendon. Three hundred and forty cases of ventral hernia following abdominal incision have been observed at the hospital during the past eight years. From a tabulation of these cases the following points worthy of note have been gleaned: In sixty-one cases the hernia followed operation for appendicitis; in twenty-five it followed Alexander's operation. In most cases the conclusion was drawn that the wound had healed by granulation. Three hundred and sixty cases of *Relapsed hernia* were observed in the last ten years after various operations for femoral and inguinal herniæ. An analysis of these cases brings out the very important fact that the relapse occurred in the great majority of cases within a few months after operation. In 64·5 per cent. relapse occurred during the first six months, in 80 per cent. during the first year, and in only 20 per cent. after the first year; only 8⅝ per cent. relapsed during from one to two years.

In cases of undescended or partially descended testes in boys, they advise against operation in the majority of cases. If left alone or treated with a truss with the pad resting above the testis, in most cases the testis will have reached the scrotum before puberty, and the rupture will probably have been cured. In fourteen cases operated on where an effort has been made to draw the testis down and anchor it to the scrotum, although the hernia was cured, the small testicle has been retracted into the vicinity of the external ring, and has either shown no further development or has undergone further atrophy.

Cases in which operative treatment is advised in adults are: (1,) As a cure by means of a truss is but rarely obtained after the age

of maturity, operation may be advised in all cases of young adults ; (2,) All cases of irreducible omentum, if the hernia be not too large and the subject not too old, are best treated by operation ; (3,) All cases of femoral hernia in patients suitable for operation ; (4,) The younger the patient the more favourable the prognosis as regards radical cure.

Contra-indications.—Operation should seldom be advised in patients over sixty years of age. Very large irreducible hernia, especially in stout persons, should not be operated upon; the risks are great and the prospect of cure very small.

Choice of Methods.—At present the evidence is strongly in favour of the superiority of *Bassini's method*; the free cutting of the internal oblique muscle in Halsted's operation is a serious defect, and this step is entirely unnecessary in Bassini's operation. The method of Bassini without transplantation of the cord has much to recommend it. The writers have collected eight thousand five hundred and ninety-four cases operated upon during the past decade with seventy-eight deaths, a mortality of less than 1 per cent.

O'Conor[6] says in 80 per cent. of his cases treated by Halsted's method orchitis supervened, and in twenty cases (out of one hundred and twenty-nine) atrophy of the testicle supervened ; he had one recurrence and one death. He has used a method of his own in fifteen cases as follows : A three-inch incision is made commencing half-an-inch internal to the anterior superior iliac spine and carried downwards and inwards to a point one inch above Poupart's ligament, and the muscles are opened by separation of their fibres, as in McBurney's operation for removal of the appendix. The funnel-shaped process of peritoneum is sought for, separated from the cord, opened, omentum and intestine returned. If these are adherent the process brings the sac up and the adhesions can be separated. The sac is then cut off flush with the peritoneum, the hole left in the peritoneum sewn up, and the muscles approximated by sutures. There is no division of muscular fibres and no meddling with the testicle.

REFERENCES.—[1] "Centralb. f. Chir.," No. 7, 1899 ; [2] "Brit. Med. Journ.," Nov. 5, 1898 ; [3] Ibid., Nov. 12, 1898 ; [4] "Ann. of Surg.," Jan. 1899 ; [5] Ibid., Nov., 1898 ; [6] "Lancet," Aug. 26, 1899.

HERNIA (Umbilical). *Priestley Leech, M.D., F.R.C.S.*

Howard Marsh[1] suggests the following method as more expeditious, and therefore safer, than the one usually performed in umbilical hernia, whether strangulated or in operation for the radical cure. The improvement consists of the treatment of the sac and the management of adherent omentum. A curved incision beginning in the middle

line above is carried over the right side of the swelling to the middle line below; a similar incision is made on the left side, the two together forming an elliptical wound, leaving sufficient skin to close the incision without tension after the sac has been removed. The whole thickness of the subcutaneous fat is separated on either side from the outer surface of the sac, including its neck. The hernial sac and its contents are clearly defined and under control. The sac is opened in the middle line at its upper part. The omentum is unfolded and the intestine exposed; any omentum not near the neck of the sac may be divided after tying, and reduced. Where extensive adhesions have formed between the omentum and intestine, or the sac, it is safer and quicker to cut through these structures at a little distance from the gut so that portions are left adherent to the gut rather than to persist in dissecting them off. The intestine having been returned into the abdomen, the omentum is taken in hand. The most expeditious way is to isolate the omentum where its neck emerges from the abdomen and tie it in strands in the usual way. There is now remaining the sac, with more or less adherent omentum; the sac is removed by dividing it at the edges of the ring. Marsh has used this method in nine cases (four for radical cure and five for strangulation), and all the patients recovered.

REFERENCE.—[1] "Brit. Med. Journ.," June 17, 1899, p. 1460.

HERNIA (Unusual Forms of). *Priestley Leech, M.D., F.R.C.S.*

A. H. Tubby[1] reports a case of retro-peritoneal hernia into the fossa duodeno-jejunalis behind the inferior mesenteric artery in a woman aged sixty, who had previously had attacks of gall-stone colic. Laparotomy was performed, and a coil of small intestine within one and a half feet of the ileo-cæcal valve was found tightly lodged in the fossa; the strangulated coil was withdrawn with difficulty, and the patient made a good recovery.

Moynihan[2] treats in his Arris and Gale lectures, "On the Anatomy and Surgery of the Peritoneal Fossæ." The main part of the lectures are anatomical in character. He describes two forms of duodenal hernia—left duodenal hernia and right duodenal hernia.

The left is the more common form, and is characterised by the three following points: (*a*,) The presence of the inferior mesenteric vein in the neck of the sac; (*b*,) The hernia spreads either outwards to the descending meso-colon, or upwards towards the transverse meso-colon or both; (*c*,) The hernial sac consists of a single layer of peritoneum; behind the sac lies in contact with the posterior abdominal wall and in front of it there is the posterior parietal peritoneum. He believes

the right duodenal hernia develops in the fossa of Waldeyer (mesenterico-parietal); in seven of the described cases the jejunum was adherent posteriorly, and in seven it was absent, and he therefore describes two forms of right duodenal hernia, the former as hernia mesenterico-parietalis parajejunalis, and the latter as hernia mesenterico-parietalis paraduodenalis. In both varieties the anterior margin of the sac contains the superior mesenteric artery.

In a paper on interstitial herniæ McAdam Eccles[3] explains the occurrence of interstitial herniæ as follows: Given a male child with an open processus vaginalis and a partially undescended testis, the unclosed process of peritoneum allows the descent of the viscera, the abnormally situated testis prevents the passage of the viscera into the scrotum, and the intra-abdominal pressure being always at work above the peritoneum is stretched in the line of least resistance, and one of the forms of interstitial herniæ is produced. In the female the narrow external ring with an open canal of Nuck furnishes a similar condition of things, the narrow external ring taking the place of the testis. Two other causes may also produce it; one is *réduction en masse*, and the other is a badly fitting truss which closes only the external ring; and the intra-abdominal pressure may gradually force the viscera into one of the sites of interstitial herniæ, as the viscera would not be prevented from passing into the canal if the truss does not lie over the canal and deep ring. These two latter causes may perhaps only act in adult life. In strangulated interstitial herniæ taxis is to be particularly avoided if possible.

REFERENCES.—[1] "Med. Press and Circ.," Sept. 7, 1899; [2] "Lancet," March 4 and 11, 1899, and "Brit. Med. Journ.," March 4 and 11; [3] "Lancet," Dec. 24, 1898, see also paper by Makins and discussion at the Royal Med. and Chir. Soc., "Lancet," April 15, 1899.

HERPES. *T. Colcott Fox, M.B.*

The "Lancet"[1] refers to Landouzy's theory that herpes zoster is a localised neuritis (usually affecting the posterior *root* and *ganglion* of a spinal nerve), probably of infectious origin—a view supported by the definite course, occasional epidemic prevalence, and the supposed immunity conferred by one attack. It may occur in known infections—tuberculosis, pneumonia, syphilis, and rarely in such affections as measles, typhoid fever. An arsenical intoxication can produce such a localised effect, probably selecting a nerve of diminished power of resistance. As the "Lancet" points out, however, zoster is due probably to different causes, for there is a traumatic origin as seen in the pressure of an aneurysm on a nerve *trunk*.

In support of Landouzy's theory Jeanselme and Leredde[2] confirm

the observation of Boulland, made in 1888, that in a number of cases careful examination shows disseminated over the entire cutaneous surface isolated vesicles (*the aberrant vesicles of zona*), quite similar to those of the zoster eruption. Tenneson, in 1893, declared that careful examination disclosed this state of things in nine cases out of ten. Dr. W. A. Mackay[3] and Dr. W. L. French[4] seem to have observed something similar.

Klippel and Aynaud[5] write on the subject of *Facial paralysis in herpes zoster*. The paralysis may supervene in the early days of the eruption or follow it. The paralysis may supervene when the zoster affects the face, or it may be "aberrant" and accompanying a zoster of the cervico-occipital region or tongue. Similarly in ophthalmic zona the third nerve may be paralysed, usually partially, or more rarely the sixth nerve.

Escat[6] records a case of *Pharyngeal herpes* in locomotor ataxy. Dupan presented a thesis at Paris, in July, 1898, on zoster occurring in general paralysis. Amongst other papers are those by Zangzer,[7] on Zoster ophthalmicus with hæmaturia, and Jonathan Hutchinson,[8] on Cases illustrating exceptional forms of herpes.

REFERENCES.—[1] "Editorial," Sept. 24, 1898; [2] "Gaz. hebd. de méd. et de chir.," July 28, 1898; [3] "Glasgow Med. Journ.," Oct., 1897; [4] "Brit. Med. Journ.," Feb. 11, 1899, p. 388; [5] "Gaz. des Hôp.," May 20, 1899, p. 525; [6] Ibid., July 6, 1899, p. 705; [7] "Cor.-Blatt. f. schweiz. Aerzte.," No. 14, 1898; [8] "Arch. of Surgery," vol. ix, July, 1898.

HYDROCELE.

Synopsis.—(Vol. 1899, p 330). Newmann's Method. Washing out the sac after puncture with Carbolic Water 3%. Injection and retention of ♏xv of Corrosive Sublimate Solution (gr. j to ℥j).

HYDROCEPHALUS. (See "Brain.")

HYDRORRHŒA (Nasal). (See "Nose.")

HYPERIDROSIS.

Synopsis.—(Vol. 1899, p. 331). Tannin, Agaricin, Phosphate of Lime, Atropine, Iron and Quinine internally for general forms. In nervous patients, Potassium Bromide or Valerian Extract, or Ammonium Valerianate may be tried. Locally, Vinegar or Alcohol Lotions; or one of the following: ℞ Tannin, gr. xv; Alcohol, ℥vij; or ℞ Alum, grs. cl; Water, ℥viij; or ℞ Borax, grs. cl; Water, ℥viij; or ℞ Liq. Plumb. Subacet, ℥iij; Water, ℥viij. For the feet a bath containing Oak Bark Decoction, or Oak Leaves in which borax ℥v to each quart is dissolved, and follow with dusting powder of ℞ Chalk finely powdered, ℥iij; Ac. Salicylic, gr. xxx to xlv. Separate toes with lint. Continuous Electric Current may do good. Offensive perspiration requires Alcoholic Lotions: *e.g.*, ℞ Borax, ℥v; Tr. Benzoin, ℥ss; Alcohol, 1 litre; or, ℞ Sol. Pot. Permang, 1 or 2%; or Chloride of Iron in weak solution;

or Naphthol, 5% alcoholic solution with a little glycerin followed by a talc and salicylic acid powder. **Formalin** may be used in 2% solution for washing feet, rinsing stockings and disinfecting boots. Powder stockings and toes with **Tannoform** or **Tartaric Acid**. Formalin may be pencilled over feet of soldiers undiluted. ℞ Bals. Peruviani, ʒss; Acidi Formici, ʒij; Chloral Hydrat., ʒij; Alcohol, ʒv. Apply with swab or spray. ℞ Borax, Ac. Salicyl., āā 15 parts; Ac. Borici, 5 parts; Glycerin, Alcohol diluted, āā 60 parts. For the hands. Unna's ichthyol ointment for the feet ℞ Ichthyol, 25 parts; Water, 15 parts; Lanolin, 25 parts. M. ft. ung. ℞ Commercial Soft Soap, 52 parts; Water, 27 parts; Vaseline, 15 parts; Zinc Ox, 6 parts; Lavender Essence q.s. Liniment for the feet. ℞ Pot. Permang., 1 grm.; Thymol, 30 c.grms.; Dist. Water, 100 grms. M. Apply to the feet, or use twice daily a mixture of ℞ Naphthol, 5 parts; Glycerin, 10 parts; Alcohol, 100 parts; then powder with Starch alone or with Naphthol; put pads between toes. Soak paper soles in this solution and dry before wearing, change daily and powder with permanganate powder, salicylic acid, quinine, tannin. Various iron salts may be used, dry or liquid. Ichthyol internally. Change stockings twice daily and soak them in boracic acid solution, washing soles of feet with the same and using cork soles, which are changed daily, soaked in the solution and dried. Lin. Belladonna ʒj to chloroform ʒj mixed and well rubbed in night and morning.

HYPERTRICHOSIS.

Synopsis.—(Vol. 1898, p. 304). **Bœttger's Calcium Sulphydrate Paste**, as depilatory. (Vol. 1899, p. 510.) **Electrolysis**, description of method.

HYPERTROPHIC RHINITIS. (See "Nose.")

HYSTERIA.

Synopsis.—(Vol. 1899, p. 165). Hysterical aphonia treated by **Voice Training** and **Breathing Exercises.**

ICHTHYOSIS.

Synopsis.—(Vol. 1898, p. 305). Cases benefited from administration of tabloids containing dried **Thyroid Gland** gr. v with **Pilocarpine Nitrate** gr. $\frac{1}{10}$.

IMPETIGO. *T. Colcott Fox, M.B.*

This is one of the eruptions which is being carefully studied bacteriologically by dermatologists at the present time. Dr. Charles I. White,[1] in a discussion on the *Rôle of the Staphylococcus in Skin Diseases*, traces the bacteriological history of impetigo and its sister affections, sycosis, ecthyma, furunculosis, abscess and carbuncle. He points out that the great majority of investigators concur in the opinion that they are probably of staphylococcal origin. There are serious flaws in the arguments of those who uphold the streptococcal theory. Unna[2] has changed his views, and, in conjunction with Frau Schwenter-Trachsler, claims a special streptococcus as the pathogenetic factor; but the investigation of the crusts rather than the earliest vesico-pustules is probably a source of error.

Dr. White contributes some observations of his own, made in the Skin Clinic of the Massachusetts General Hospital, which go to confirm the staphylococcal origin.

It is curious to note how little the ointment (12 grains of **Ammoniated Mercury** to 1 ounce of **Benzoated Zinc Ointment**), which is such a favourite in England for impetigo, is used elsewhere. In the juvenile type Dr. White uses frequent applications of **Soap and Water,** and a 5 per cent. **Boracic-Acid Ointment** to be applied twice daily, with a thorough soaking of the scalp with crude petroleum. In the adult type a 5-per-cent. ointment of **Sulphur,** or the application of **Black-wash** for fifteen minutes night and morning, in conjunction with a 5-per-cent. ointment of **Salicylic Acid** and **Carbolised Cosmoline,** is recommended.

Menahem-Hodara,[3] of Constantinople, has used the following ointment with success in ordinary impetigo, and also for moist and scaly eczemas of the head, face, ears, and other parts of the body of children and adults :—

℞ Benzoin.	12 parts	Sacch. Alb.	6 parts
Ol. Olivæ	9 ,,	Acid. Carbol.	·05 to ·5 part
Hydrargyri Oxidi Rubri	15 ,,		

The proportion of carbolic acid may be made to vary with the amount of exudation or with the itching.

The sugar (it should be crystallised sugar) must, before being powdered, be dehydrated and dried for an hour in a water-bath.

This prescription has been especially effective in some cases of chronic weeping eczema of the head and ears in children, which were very obstinate and very irritable.

Jacquet, of Paris, after cleansing away the impetiginous crusts, applies either **Vaseline** with 10 to 15 per cent. of **Boric Acid,** or the following cerate of Vidal's :—

℞ Hydrarg. Ox. Flav.	grm. ½ to 1	Cerat. Anhydr.	grms. 20
Ol. Cadini	grms. 1 to 3		

or plasters can be applied, such as the well-known Vigo's plaster, or Vidal's red plaster, consisting of minium (oxide of lead), 2 grms. 50; cinnabar, 1 grm. 50 ; diachylon, 26 grms.

REFERENCES.—[1] "Boston Med. and Surg. Journ.," Sept. 7, 1899 ; [2] "Monats. f. Prakt. Derm.," vol. xxviii, Nos. 5, 6, 7, 8 ; [3] Ibid., vol. xxvii, No. 10, p. 199.

INFANTS (Feeding of). *Henry Dwight Chapin, M.D., New York.*

Dr. Henry Ashby[1] urges the value of **Milk-whey** in infant feeding. The composition of whey, according to Koenig, is as follows : Proteid, 0·85 ; fat, 0·23 ; lactose, 4·71 ; salts, 0·65 ; water, 93·24. Thirty ounces

of good fresh milk are placed in the bottle provided, and the heat is raised to 104° F. ; add 2 teaspoonfuls of essence of rennet and set aside for a few minut s. When curdling has taken place, thoroughly break up the curd by stirring and shaking up the bottle ; then strain through fine muslin or a colander. Whey prepared in this way, with or without an addition of 2 or 3 drachms of milk-sugar to the pint, makes a useful food for newly-born infants who have to be artificially fed, or for infants who suffer from chronic vomiting or have liquid, green and curdy stools. They will gain weight and be more comfortable than when taking diluted milk. It is often convenient to give dyspeptic infants whey at first, or even dilute the whey with a solution of maltose or barley-water, as such infants cannot always digest as much as 2 per cent. of fat in their food. As they improve, add milk to the whey, or "top milk," as their digestive powers gain strength. It is always well to add a grain or two of bicarbonate of soda to render the mixtures neutral or slightly alkaline.

Dr. Henry D. Chapin[2] recommends the use of **Dextrinised Gruels** as an attenuant of cow's milk in infant feeding. A series of experiments is recorded in which various attenuants were employed, but the finest curds were always found to be present when gruels were used. The same results were obtained when the different mixtures were given to a dog with a gastric fistula. Gruels may be dextrinised by most of the commercial malt extracts, or by a solution of diastase. To make the latter, a tablespoonful of malted barley grains is put into a cup and covered with a little cold water. This is allowed to stand over-night in a refrigerator, when the solution, resembling thin tea, is strained off. A tablespoonful of this solution will dextrinise a pint of gruel in ten or fifteen minutes.

Dr. Gregor[3] recommends the use of **Malt Soup** in feeding infants with gastro-intestinal affections. The method of preparing the malt soup is as follows : 50 grms. of wheaten flour are well mixed up with $\frac{1}{3}$ litre of cow's milk and the mixture passed through a sieve. In another vessel 100 grms. of malt extract are dissolved in $\frac{2}{3}$ litre of water at 50° C., and to it are added 10 c.cm. of a 11 per cent. solution of potass. carb. ; these two preparations are then mixed and boiled.

Dr. Wirshillo[4] has studied the effect of **Cod-liver Oil** on the secretion of gastric juice. Fifteen experiments were made on children free from any gastro-intestinal disturbance. The following conclusions were reached —

(1,) Cod-liver oil diminishes the amount of HCl. and pepsin, the latter being more affected in the beginning of digestion.

(2,) The disturbing effect on the gastric juice is especially marked at the beginning of digestion.

(3,) The secretion of the gastric glands, though weakened by the oil, lasts longer than usual.

The author then concludes that, in view of these objectionable features of cod-liver oil, we should, by further experimentation, find another oil equally efficacious but not injurious to digestion.

Dr. R. G. Freeman[5] has noticed that the great bulk of bacteria that contaminate **Milk** may separate by natural process from it without the use of filtration, or heat, or the addition of any preservative. If milk is allowed to stand and the cream rises, and then a separate analysis is made of the milk and cream, it is found, in the average of a considerable number of analyses, that the cream contains about three hundred times as many bacteria as the milk, and with the rising of the cream about 99 per cent. of the bacteria are removed from the milk. This separation of the bacteria may be due to the better growth of bacteria in the top layer from the better nutriment furnished by the cream and the greater supply of oxygen ; or it may be due to the carrying up of bacteria by the fat globules as they rise. If heating milk to 68° C. or 155° F. is injurious to the milk as an infant food, the bulk of the bacteria present may be separated by natural processes from the milk by allowing the cream to rise, and the cream may then be pasteurised or sterilised, and afterwards mixed again with the comparatively germ-free raw milk.

REFERENCES.—[1] "Edin. Med. Journ.," vol. xlvii, No. 526, 1899 ; [2] "Med. Rec.," vol. lvi, No. 6, 1899 ; [3] "Deut. med. Woch.," Oct. 6, 1898 ; [4] "Vratch," Jan., 1899 ; [5] "Archiv. Ped.," vol. xvi, No. 8, 1899.

INSANITY. *James Shaw, M.D.*

Melancholia.—Marie and Robinson[1] observed the following symptoms in two cases in which the urine reduced Fehling's solution, and contained a substance which gave the reactions for lævulose ; melancholia with predominance of ideas of ruin, and suicidal tendencies, obstinate insomnia, and permanent impotence, but with little or no thirst, polyphagia or polyuria, and no abnormal specific gravity of urine. The symptoms and the lævulose disappeared rapidly when carbo-hydrates were removed from the diet.

Neftel,[2] whose views on periodical melancholia published a quarter of a century ago, have been accepted by most authorities, now gives an account of his observations and researches on what he calls remittent or relapsing melancholia. This, unlike periodical melancholia, affects persons who are free from any neuropathic disposition, is almost always curable, develops gradually, declines very slowly,

and leaves the patient slightly depressed (remission). It differs etiologically from neurasthenia, and is distinguished from hysteria, as a rule, by the absence of the hysterical stigmata. The most characteristic features of remittent melancholia are the angiospastic attacks, the sluggishness of function, and the absence of inherited tendency. Frequently an affection of the heart, liver, or other organ is considered the cause of the psychical depression ; whereas in reality the latter with its accompanying vasomotor disturbances is the cause of the former.

TREATMENT.—Neftel says it is important for the patient to have **Daily Outdoor Exercise**—short walks gradually increased. On returning from his walk he should take hot drinks until he perspires, then a short rest, and in the afternoon, if possible, repeat the process. The patient should take **Hot Milk** at bedtime, some of the **Bitter Waters** before breakfast, and a warm bath followed by a cold douche or sponging in the morning. Neftel gives **Hydrochloric Acid** three-quarters of an hour after the principal meals for a week or ten days, then **Iron** with the meals for about a month, then **Sulphur** in combination with sugar of milk. After a time the iron can be resumed and given alternately with the sulphur. He speaks highly of **Galvanisation of the Brain,** and says he has never known it do harm or fail to do good. Where malaria complicates the psychoneurosis he prescribes **Quinine** before resorting to the galvanic current. Unless indicated by exhaustion or emaciation he does not advise entire rest, though an extra hour may be required. Neftel deprecates local treatment in genito-urinary complications unless in urgent cases. Vesical catarrh, cystitis, etc., generally disappear spontaneously after the cure of the neurosis. The acute angiospastic attacks occurring in the disease often terminate spontaneously with profuse perspiration and increased urinary secretion. Neftel, therefore, advises the patient to sip hot water or hot lemonade in these attacks until perspiration ensues. This is generally followed by complete relief from the vasomotor disturbance (precordial distress, palpitation, etc.), and by refreshing sleep from which the patient awakes feeling better than he had done for days or weeks.

Loveland [3] finds from the examination of the blood in fifty-seven melancholiacs that, contrary to what obtains in asylum cases of some duration, the percentage of hæmoglobin and the number of red corpuscles are above the normal in recent cases. He considers that the quality and quantity of the patient's food should be regulated by the results of the physical examination of the patient, including the examination of the blood and urine. He advises to *promote elimina-*

tion by every possible avenue—bowels, kidneys, and skin—and not to forget the efficacy of water and exercise in this respect. Only such medicines ought to be given as may be needed to procure adequate sleep and the necessary elimination should diet and hygiene not suffice. In an illustrative case the treatment was: A diet mainly of **Milk and Vegetable Food**, 15 grains of **Sodium Phosphate** in a glass of hot water before meals, and 2 quarts of water daily. Only forty-five of the patients stayed under observation for a prolonged period, and of that number thirty-five recovered, eight improved, and only two failed to improve. The longest period during which any patient was under treatment was about seven months. (See "Serums, etc.," and "Sedatives, etc." *infra.*)

General Paralysis of the Insane.—Sachs [4] observes that in the earlier stages the physical signs arrest our attention. Chief among these, in the order of their importance, are: (1,) The stammering tremulous speech; (2,) The tremor of the facial muscles and tongue; (3,) The pupillary symptoms, viz.: sluggishness to light, complete immobility, inequality, irregularity; (4.) The change in the handwriting; (5,) The exaggeration or absence of the reflexes. (1,) and (2,) are of great value as early signs if alcoholism can be excluded. In estimating the value of (4.) too much importance should not be attached to tremor alone, for this occurs in other diseases; the omission of letters, syllables, words, and punctuation, and the running together of words may be the first signs, of serious mental defect. With regard to (5,) absence may denote tabes associated with general paralysis, whilst care should be taken to exclude neurasthenia if there is exaggeration.

Wickel,[5] as a result of his studies on the differential diagnosis of general paralysis and syphilitic pseudo-general paralysis, calls attention to the symptoms common to both, viz.: A similar alteration in the pupillary reaction, mental weakness, excitement, depression, and an apathetic state; the difference being that in general paralysis the mental degeneration is more progressive. In syphilitic pseudo-general paralysis the disturbances of the muscular apparatus of the eyes are of a slighter character; there are fleeting and chronic aphasic symptoms, transitory remissions, and failure of the mental weakness to advance. The decisive test is recovery under mercurial inunction and iodide of potassium. Of six cases, in which the evidence of luetic infection was conclusive, four recovered under antisyphilitic treatment.

TREATMENT.—Godding,[6] in a plea for the active treatment of general paralysis, states that of ten advanced cases treated by the **Cold Wet Pack**, one patient was able to resume business owing to arrest of the disease, two showed marked, and two some improvement.

Whatever the permanent effect of the wet pack may be there is generally marked benefit in calming present excitement, promoting sleep, and removing mental confusion and vascular excitement. It need not interfere with special treatment, antisyphilitic or other.

Godding describes his method as follows: Use as many blankets as are considered necessary to produce a good reaction, placing one blanket above the other smoothly spread out upon the bed; over all place a linen sheet wet in cold water and lay the patient on that. In wrapping the sheet about him take care to separate adjacent parts, as the legs from each other and the arms from the body, by folds of the sheet; then wrap in the blankets, tucking closely fold by fold. Wet the patient's head before putting him in the pack, and when he is in it apply an ice-cap or wet towel. If the patient is very feeble with subnormal surface temperature more blankets will be required or perhaps **Hot Bottles** to feet. As a cardio-vascular tonic the effect of the pack is enhanced in suitable cases by a short fan douche, beginning with a temperature of 70° F. for five seconds and lowering it one degree each day, following this with friction to the reaction point. **Massage** is usually given half an hour after the pack. In cases of active excitement the patient may be taken from the pack, rubbed or douched, and put back directly. This, at intervals while the excitement lasts, which under this treatment is seldom more than twenty-four hours. If pyrexia is present it should be relieved by cool bath or short packs, with light covering before the pack, as above detailed, is given; otherwise the pyrexia is aggravated. Temperature should be taken twice a day, and rise promptly met by **Ice** to the head. The bowels should be carefully attended to in order to avoid autotoxis.

Toxic Insanity.—A writer in "Medicine"[7] calls attention to the frequency with which acute chloral dementia, with its ataxia, grandiose delusions, fibrillary or general tremor, hyperidrosis, and pupillary inequality, is mistaken for general paralysis. Prompt withdrawal of the drug is often followed by disappearance of the symptoms. It would seem wise to keep cases in which hypnotics have been employed under observation a sufficient length of time to learn whether we are dealing with drug-habit insanity or not.

Neil McLeod,[8 9 10], of Shanghai, has reported six cases of drug habit—morphine, chloral, and cocaine—treated with **Sodium Bromide** in heroic dosage. Five recovered, and one patient, who was suffering from double pneumonia and pleurisy, died. His method of treatment is as follows: It having been ascertained that there is no organic disease to contra-indicate this treatment, the sodium bromide may be given in solution every two hours for three days, but not during the

night after bedtime. The first and second dose each day should be 2 drachms, the third and subsequent doses 1 drachm. Three ounces, thus given in three days, will usually suffice to induce deep sleep lasting several days and nights, during which milk alone should be given, and bladder and bowel evacuation attended to regularly. For a week or ten days after this sleep speech, locomotion, and mental condition gradually improve. Delusions, at first numerous, lessen, and memory improves. Irregularity of sleep must not be further treated. Solid food should be given as soon as it can be eaten, and the taking of exercise encouraged after locomotion is recovered. Any muscular tenderness is only transitory. An even, warm temperature of the patient's room should be maintained, warm night clothing provided, and a nurse kept on duty day and night for at least the first three weeks. With regard to withdrawal of the drugs, morphine may be given the first day of treatment in the habitual dose, in half this dose the second, and withdrawn or nearly so the third. Chloral may be cut off at once if there is a good sleep the first night. Cocaine may be dealt with like morphine.

McLeod claims the following advantages for his method of treatment: The withdrawal within three days of the drug causing the habit; the certainty that this will cause no suffering; the inability of the patient to deceive those dealing with him, or to enlist, after the third day, the aid of attendants to do so; the possibility of treatment in any hospital or private house; the absence of risk of substituting another drug habit; and the loss of the crave whether the patient desires it or not. In one case complicated by alcoholic crave, this crave was also lost.

Operation as Cause and Cure.—Manton [11] says it may be put down as a rule that *post-operative Insanity* is most likely to develop in those subjects who have a bad personal history or are handicapped by heredity, and the operator (gynæcological especially) should proceed with the utmost caution in his treatment of this class of cases. About two cases occur in every thousand abdominal sections. The average time of onset is the second to the fifth day, but insanity may follow the operation immediately or develop slowly, so that several weeks may elapse before the mental symptoms become serious. The type assumed may be acute confusional, maniacal, or melancholic. Most of the cases run a rapid course and the tendency is to recovery; a few die, and probably still fewer end in a chronic condition. Not many, therefore, are found in asylums.

In nine hundred and ninety admissions to Derby asylum McPhail[12] found forty cases of post-operative insanity (thirteen men and twenty-

seven women). The average age of the men was forty-eight, of the women forty-two years. Hereditary predisposition to insanity was ascertained in only nine of the cases. The types of insanity were as follows : Melancholia, nineteen ; mania, sixteen ; general paralysis, two ; dementia, two ; epileptic insanity, one. Twenty-four patients recovered after being under treatment from two to nine months, eight died (four from malignant disease and four from general paralysis and other brain diseases), and eight drifted into a chronic state or were transfered to other institutions. Strange to say, the post-gynæcological closely approximated in number to the puerperal cases admitted during the same period.

Harvey Reed,[13] at the meetng of the American Medical Association, said that slight operations were often followed by insanity, while many insane persons were benefited by operation. Several cases of acute mania or severe melancholia following operations were reported including one in which the subject was a man. A case was also reported in which a woman, who had been twelve years insane, was cured mentally and physically by operations on the pelvic and abdominal organs.

Moyer[14] lays great stress on the obtaining of sleep in the neurasthenic state which sometimes supervenes on operations, and advocates the immediate but temporary use of **Bromides** in doses of 30 to 80 grains.

Rohé,[15] at the Toronto meeting of the British Medical Association, gave an abstract of thirty-four cases of insanity of varying duration, with pelvic disease, in which he had operated during the six preceding years. There were eleven complete recoveries ; nine cases improved, some very decidedly ; eleven not improved mentally ; and three deaths consequent upon the operation, which was mostly removal of the uterine appendages. In a few cases the uterus was operated upon alone or in addition.

Hobbs,[15] at the same meeting, gave an account of his results from the *gynæcological* (*surgical*) *treatment* of eighty insane patients suffering from various forms of pelvic disease. Of these cases thirty recovered mentally, eighteen improved considerably, and twenty-eight showed no mental change. Death followed operation in four cases. Of the thirty patients who recovered, eleven had been insane less than a year, seven between one and two years, four between two and three, four between three and four, one between four and five, and three over five years.

J. Russell[17] protested against the surgical mutilation of helpless lunatics and the exaggerated claims that are made for it as a remedy

for insanity. He admitted that there may exist pathological conditions in the pelvic organs of lunatics which tend to intensify the mental disorder and demand operation as a matter of justice. He reported three cases of young females who had the ovaries removed, the only result being that the acute symptoms were replaced by a dull, listless, apathetic demented condition with no prospect of recovery. In the discussion that ensued Rohé and Hobbs repudiated the idea of operating unless there was actual pelvic disease. If mental improvement as well as physical resulted, so much the better.

E. Hall[18] has reported the case of a woman aged thirty-five, considered hopelessly insane, in whom removal of the appendages for ovarian cyst with tubal adhesions was followed by restoration to mental health.

Angelucci and Bieraccini,[19] in their "International Inquiry," received the reports of one hundred and nine cases, only seventeen of which were benefited by operation, whilst sixty-nine were made worse by it, forty-four neuropathic cases not previously insane becoming so afterwards. The authors conclude that ablation of the normal uterus or appendages is to be entirely proscribed as a means of cure in hysterical neuroses and insanity; that the existence of hysteria constitutes a contraindication to surgical operation for the cure of gynæcological conditions; and that such operations can only benefit the neuropathic state of the patient through suggestion. They recommend, where all other means of treatment have failed, that the effect of suggestion should be tried in hysteria by simulating the operation of laparotomy.

General Therapeutics.

Serums and Animal Extracts.—**Thyroid** can hardly, after some years' trial, be said to be reliable except in myxœdematous and cretinoid cases, but it appears often to act well in melancholia and stupor. Middlemass,[20] in his account of the treatment of a series of cases with thyroid, agrees in the main with the report of the results obtained by Bruce and McPhail some years ago, and epitomised in previous issues of the "Medical Annual." Phthisis, organic disease of the heart, and emaciation are contraindications. Digestion requires attention during treatment; otherwise, no patient is in danger of being made worse either physically or mentally by a course of thyroid. In the majority of the cases the dosage consisted of four 5-grain tabloids thrice daily for six days, the patient remaining in bed during treatment and for some days afterwards. Females are much more susceptible to benefit from thyroid than males are. In very many cases a course of

thyroid modifies the rapidity with which dementia progresses, even when a cure is not effected. The author thinks that no case should be allowed to become demented without a trial of thyroid. He justifies Bruce's suggestion that a course of thyroid might be used as a mean; of prognosis. After four years' experience, Middlemass says only one case out of two hundred, known individually by him has recovered that did not do so after thyroid; and even this one was doubtful, having had thyroid only a few months before.

Easterbrook,[21] from his researches anent the action of thyroid and parathyroid extracts upon metabolism in the insane, concludes that whilst thyroid is indubitably a profound katabolic stimulant the external parathyroids of the ox when administered to the human subject, whether in the solid state (dry or fresh) by the mouth or in the form of glycerin, ethereal, or saline injections under the skin, seem to produce no effects at all except a slight increase in pulse-tension in common with various other organic extracts.

Campbell Clark,[22] in an investigation extending over two years at Lanark Asylum, submitted three classes of cases to treatment with **Spleen Extract:** (1,) Those of an intractable character, *e.g.*, chronic inertia; (2,) Recent cases due to physical weakness, *e.g.*, puerperal cases; (3,) Selected cases suggested by treatment of the first two classes. After treating thirty cases he arrives at the conclusions that splenic treatment increases nutritive activity by aiding digestion and stimulating the glandular activity of the skin, and gives rise to striking mental changes, sometimes of an abnormal character—exhibition of temper in stuporous cases, elevation in shy and stupid ones, etc. Contrasted with thyroid treatment, spleen treatment was more phenomenal in its effects, more lasting and sure in its results, and exceedingly safe. He strongly recommends a preparatory course of spleen in any case where thyroid treatment is proposed.

Bois and Kerr,[23] at the Edinburgh meeting of the British Medical Association, reported twenty-two cases treated with spleen extract—twelve males and ten females. Physical improvement occurred in ten males, mental recovery in five. In seven females physical improvement took place, in three mental recovery. The recoveries of males were three from melancholia and two from stupor; of females, one from mania and two from stupor. "The treatment was begun with three capsules of desiccated spleen representing 100 grains each of fresh gland; this was increased to 6 a week later. Capsules of liquid extract, each containing 20 grains of fresh spleen, were tried some weeks later, and with more distinct benefit." It is best given at least half an hour before meals Adolescents are especially amenable to

treatment. One patient owed her recovery to thyroid after a course of spleen treatment had been pursued.

Wilcox[24] gave **Ovarian Extract** to five patients who, apart from their insanity, suffered from amenorrhœa. In four menstruation was re-established and there was marked mental improvement or recovery. These patients were aged eighteen, nineteen, twenty, and thirty-three, and suffered from acute melancholia, acute mania, and in one case dementia following mania. In one patient, aged forty-three, there was no effect. Three 5-grain tabloids of the extract were given the first day, and the number increased by three each day until the daily dosage was twelve.

From an analysis of twenty cases Neff[25] concludes that **Tuberculin** is a reliable and safe diagnostic agent. In order to detect fluctuation in temperature after injection a systematic record should be kept. A rise of less than 2° F. should not be accepted as evidence of reaction. An initial dose of 2 miligrammes is recommended. In view of the frequent absence of subjective symptoms of phthisis in insanity tuberculin may prove invaluable where the examination of the thorax and sputum is unsatisfactory. The test is only applicable where the temperature curve is regular.

Mairet and Vires[26] have found that the injection of **Pure Serum** taken from rabbits' or dogs' blood was followed by a notable physical improvement in the depressed forms of mental disease. Their experiments on the injection of human serum were referred to in the 1897 "Annual."

De Boeck[27] recommends, as an alternative to œsophageal feeding in the insane, the injection of a normal solution of **Chloride of Sodium** into the gluteal muscles. In one case 200 grammes of the solution were injected in the morning and 300 in the afternoon, with the result that two days after the first injection the patient fed herself, became calmer after her former excitement, and slept well. In another case —melancholia with sitiophobia and extreme weakness—life was prolonged for a month. An indiarubber tube, a trocar, and hot compresses are all the apparatus required ; asepsis should be observed, and the solution should be of a temperature between 37° and 40° C.

Motet and De Fleury[28] say that injections of **Artificial Serum** aid powerfully the action of bromides in the treatment of epilepsy, two or three injections causing 2 or 3 grains to produce as marked an effect as 20 or 30 grains administered alone. By this method the frequency of the seizures is lessened and the mental condition greatly improved.

In saturnine encephalopathy normal saline solution (artificial serum)

sterilised and warmed to the temperature of the body, injected subcutaneously in large doses (1 to 1¾ pint), is the treatment found most satisfactory by G. Goidin.[29] Bleeding to about half the amount of the proposed injection should be carried out at the same time. In no case have bad effects been known to follow this treatment, while the albuminuria which is present in these cases disappears completely under it.

Several authors have recommended the use of enemata of normal saline solution (ʒj sodium chloride to a pint of warm water previously boiled) in place of the more elaborate and less safe methods—intravenous and subcutaneous injection. Lépine[30] avers that the simpler process is quite as efficient as the more difficult ones in shock, hæmorrhage, and sepsis. (It is, therefore, to be presumed that it would act equally well in cases of insanity or epilepsy.—J. S.)

Sedatives and Hypnotics.—Murray,[31] drawing attention to the danger of forgetting old remedies, instances the great sedative value of **Calomel** in large doses, and the good effects which follow the administration of 10 grains at the outset of delirium tremens in a robust subject. He administered 30 grains to an epileptic during an acute maniacal attack, having first got the patient sufficiently under chloroform. After profuse purging and vomiting the patient became quiet, fell into a sound sleep, and awoke perfectly calm. In another case, the patient, a man of immense strength, suffering from acute mania, was given 80 grains, also during chloroform narcosis. He became nauseated and subdued, was removed to an asylum, and made a good recovery.

Viallon[32] has found **Tribromide of Salol** very useful in general paralysis and chronic cases in which periods of excitement occur. A dose of 30 grains given at 7 p.m., in soup or other liquid, induces sleep or at least a diminution of excitement. He considers it superior to potassium bromide for such cases.

G. Schmidt[33] finds **Valerian Tea** a valuable remedy for insomnia due to nervous excitement, etc., especially in female patients. He recommends ¼ litre of boiling water to be poured on a tablespoonful of crushed valerian root. One or two cups of the tea to be drunk with or without sugar about an hour before bedtime. The addition of a little potassium bromide increases the action.

Bradbury[34] has long been in the habit of giving a mixture of **Bromide, Tincture of Sumbul, and Tincture of Hop in Camphor Water** at the climacteric; and it has helped to remove the insomnia and flushing heats. He finds a **Hot Bath** at a temperature of 104° F., cold water being simultaneously poured upon the head, most efficacious in

inducing sleep in the early stages of acute mania. In melancholia a grain dose of **Erythrol Tetranitrate,** by reducing arterial tension, will frequently act better than anything else. Among the medical officers of the American army 20 grains of powdered **Capsicum,** in the form of a bolus, is the favourite hypnotic for delirium tremens.

G. Richard[35] recommends as a modification of the wet pack, the application of **Wet Flannel Roller Bandages** in the insomnia of neurasthenia. According to Weir Mitchell, the "**Drip Sheet**" of hydropathic establishments is a remedy past praise in many forms of insomnia.

Wilcox[36] compares a number of the best known hypnotics, and speaks of them as follows: Chloral is the most popular hypnotic and the one which most frequently gives rise to habit. A safe derivative of this drug is **Chloralamide,** inasmuch as the amide radicle neutralises to a considerable extent, the depressing action on the heart; and as it is slowly soluble its action is more prolonged. If chloralamide habit is formed it is comparatively easily cured. The most potent hypnotic is, perhaps, **Paraldehyde**; chloralamide ranks second, pellotine third, and trional last of these four. Sleep follows most quickly after **Pellotine,** next after paraldehyde, then after chloralamide, and lastly after trional. With moderate doses the longest sleep is obtained from **Trional**; next comes paraldehyde, then pellotine, and lastly chloralamide. The danger of contracting the habit is extremely slight from pellotine; it is a little greater from chloralamide; it is very great from paraldehyde. **Chloralamide** is the safest of all; next comes pellotine, then paraldehyde; the most dangerous for continuous administration is trional. The dosage and uses of these substances have been referred to in previous issues of the "Medical Annual."

Cases in which large doses of paraldehyde had been taken for some time, reported by Reinhold[37] and others, prove its comparative safety. Cases of poisoning by massive doses are rarely fatal. Mackenzie reports a case in which 105 grammes had been taken at once, yet the patient recovered after thirty-four hours of narcosis.

In the last issue of the "Medical Annual," the most recent views on the classification of the mydriatic alkaloids of the belladonna group were given. According to these **Hyoscine** (whose uses have been dealt with in several previous issues), is an impure scopolamine, consisting of scopolamine with a certain admixture of hyoscyamine, the latter being identical with atropine. Scopolamine hydrobromide is given as a synonym for hyoscine hydrobromide in the new Pharmacopœia. S. Tomasini[38] has employed the hydrobromide and

sulphate of scopolamine with equal results. He gives from $\frac{1}{250}$ to $\frac{1}{64}$ of a grain subcutaneously. The sleep, which is induced in a very few minutes, is quiet, resembles the physiological, lasts usually from four to five hours, and may be prolonged to eight hours without interruption. There are no disturbances nor unpleasant symptoms, such as nausea. In acute mania, epileptic mania, and periodical insanity, it is a remarkable sedative. Habituation occurs easily, and the dose must be rapidly increased.

A. Cristiani[39] gives **Lactophenin** in doses of 15 to 45 grains suspended in sweetened mucilage in the evening one hour after food. He has employed it in more than two hundred cases of insanity accompanied by insomnia, and concludes that it has a hypnotic action which is certain, rapid, intense, and harmless. The sleep which it induces is deep, calm, restorative, and lasts generally from four to nine hours. Its use is not followed by any unpleasant phenomena, such as headache and *malaise*. The drug has no cumulative action. Like all hypnotics it fails to act in some cases and loses its effect after a time in others. He considers that it is the hypnotic *par excellence* in the insomnia of the insane when the physical health is bad.

Wefers[40] reports a case in which a severe attack of giddiness with quickening and intermission of the pulse supervened, in a vigorous female, twenty minutes after taking $7\frac{1}{2}$ grains of lactophenin for headache.

Namirez[41] has investigated the physiological action of lactophenin by experimenting on dogs and rabbits. He concludes from these experiments that the drug is but slightly toxic, $138\frac{1}{2}$ grains, given by the mouth, being required to endanger the life of a man weighing 154 pounds.

REFERENCES.—[1] "Brit. Med. Journ.," Epit., April 9, 1898; [2] "Med. Rec.," June 11, 1898; [3] "New York Med. Journ.," June 25, 1898; [4] "Med. World," Sept, 24, 1898; [5] "Journ. of Mental Sci.," Oct. 1898; [6] "Brit. Med. Journ.," Nov. 13, 1897; [7] "Clin. Journ.," Sept. 14, 1898; [8] "Brit. Med. Journ.," July 10, 1897; [9] Ibid., April 16, 1899; [10] Ibid., July 15, 1899; [11] "Clin. Journ.," Sept. 15, 1897; [12] "Brit. Med. Journ.," Sept. 23, 1899; [13] Ibid., Epit., July 2, 1898; [14] "Journ. of Mental Sci.," Jan., 1898; [15] "Brit. Med. Journ.," Sept. 25, 1897; [16] Ibid., Sept. 25, 1897; [17] Ibid., Sept. 25 1897; [18] "New York Med. Journ.," June 18, 1898; [19] "Brit. Med. Journ.," Epit., Jan. 22, 1898; [20] "Journ. of Mental Sci.," Jan., 1899; [21] "Lancet," Aug. 27, 1898; [22] "Journ. of Mental Sci.," July, 1898; [23] "Brit. Med. Journ.," Sept. 10, 1898; [24] "Journ. of Mental Sci.," July, 1899; [25] "Alien. and Neurol.," April, 1899; [26] "Journ. of Mental Sci.," April, 1898; [27] Ibid., April, 1899; [28] "Med. World," June 3, 1899; [29] "Brit. Med. Journ.," Sept. 9, 1899; [30] Ibid., Sept. 9, 1899; [31] "Journ. of Mental Sci.," Jan., 1898; [32] "Med. World," June 17,

1899; [33] Ibid., Dec. 24, 1898; [34] "Brit. Med. Journ.," July 15, 1899; [35] "Journ. of Mental Sci.," April, 1898; [36] "Med. World," Dec., 17, 1898; [37] "Journ. of Mental Sci.," Jan., 1898; [38] "Amer. Journ. of Med. Sci.," Sept., 1897; [39] "Brit. Med. Journ.," Epit., Dec., 10, 1898; [40] "Journ. of Mental Sci.," April, 1898; [41] "Brit. Med. Journ.," Epit., Feb. 18, 1899.

INSECT BITES.

Synopsis.—(Vol. 1898, p. 329). Ottinger paints pure **Ichthyol** over the wound, or a paste of ichthyol and lanolin or vaseline in equal parts may be used. 10% ichthyol gutta-percha plaster is useful. Pure ichthyol or ichthyol ointment for severest cases. Should whole limb be swollen and painful, paint with ichthyol, cover with gutta-percha tissue, and envelop in ice. To prevent bites apply as lotion: ℞ Acetic Ether, 5 parts; Eucalyptol, 10 parts; Cologne Water, 10 parts; Tincture of Pyrethrum, 50 parts. M. Dilute with 4 or 5 times its bulk of water.

INSOMNIA.

Graeme M. Hammond, M.D., New York.

Bradbury states, in the "Croonian Lectures," that the causes of insomnia may be classed under four heads:—

(1,) *Irritative Causes.*—This class includes all forms of insomnia caused by pain and milder irritations—teething, indigestions, worms, eye-strain, inconvenience of faucial adenoids, cold feet, asthma, and vesical irritation.

(2,) *Toxic Causes.*—Under this head may be mentioned alcoholism, gout, nicotism, gastric and intestinal disorders, Bright's disease, and excessive use of beverages.

(3,) *Psychical Causes.*—Grief, worry, shock, and mental anxiety.

(4,) *Causes arising from Changes in the Mode of Life.*—Eating late dinners by those unaccustomed to them, and change of climate sometimes give rise to insomnia.

The removal of the cause is the first measure to be considered. After this, hypnotics are of great value in breaking up the habit of sleeplessness. For this purpose he prefers **Paraldehyde.** Chloralamide and chloralose are safer but slower than chloral hydrate. Of the two the author favours **Chloralamide.** The sulphones (sulphonal, trional, and tetranal), are also valuable, and in practice he has found **Sulphonal** the most valuable of the three. On the whole, the bromides seem to be the least harmful, and in simple cases, uncomplicated by other diseases, it is his practice to try them before resorting to any other drug.

Sleeplessness from overwork, and especially literary work, requires mental rest and change of air and scene. Temporary exposure to the cool air of a bedroom, or the wet pack, or a bath is often useful, and so is a glass of whisky-and-water at bedtime, especially to those unaccustomed to the use of alcohol. A capsule containing 30 minims

of turpentine, given at bedtime, is sometimes beneficial in the insomnia of overwork and worry. The drug acts as a stimulant and derivative, and is stated to act best in plethoric cases. With nervous and hysterical women, especially at the menopause, the bromides are very useful. He recommends a mixture of bromide, tincture of sumbul, and tincture of hops in camphor water.

REFERENCE.—"New York Med. Journ.," Oct. 7, 1899.

INTESTINE (Surgery of.) *Priestley Leech, M.D., F.R.C.S.*

Uniting Divided Intestine.—The question of the best method is still hotly discussed, and universal agreement is as far off as ever. The trend of opinion is, however, towards the **Murphy Button.** Treves,[1] whose opinion has great weight, in a suggestive paper on "Some Rudiments of Intestinal Surgery," thinks it is the best appliance at present for the union of divided bowel. He has employed it in fifty cases with satisfactory results; it requires no elaborate preparation, it is always ready, its introduction is exceedingly simple, and is effected in a few minutes; the two parts of the instrument may jam, but he thinks this accident is the result of careless handling.

The two definite and undoubted objections are these: It may be indefinitely retained, and its separation may be followed by contraction of the artificial opening. The explanation of the cases of contraction of the opening (notes of cases are given in the paper) in the stomach or in the colon is that the upper viscus is much dilated at the time of the operation; after the operation the dilated organ contracts and consequently the newly made hole contracts. In these cases where distension of a viscus exists contraction may follow every method now in vogue. Of the various forms of suture Treves thinks the ancient one of continuous suture of the mucous membrane and Lembert's suture externally is the best. Experiments on animals are no help to the operator when he comes to operate on the human intestine, and in 1882 he devised an indiarubber bag to assist in suturing the intestine, which has been recently (*vide* "Medical Annual," 1899) re-invented by Dr. Halsted: after some little experience Treves discarded it as useless.

Chlumsky[2] states the results of experiments as to the value of the different methods of bowel union. He says the advocates of the button, and especially of Murphy's button, have increased in number in recent years, but he thinks an absolutely perfect method of intestinal anastomisis is yet to be discovered. He has made a microscopical study of the union produced by various methods, the results of which he will publish later. The methods used were Albert's double row of

sutures (using the continuous suture in place of the button suture), Murphy's, Frank's, and other buttons. He tested the strength of the anastomosis by direct traction at one end of the bowel loop, but this was inexact and unsatisfactory ; he then tested it by the amount of water pressure the anastomosis could stand without rupture. There was no essential difference in the firmness of union by suture or button anastomosis ; both stood about the same amount of pressure ; circular anastomosis stood a higher pressure than lateral anastomosis. In recent suture anastomosis he found that the perforation was almost without exception where the knot of the continuous suture lay. All forms of anastomosis were very friable between the third and the fifth day. Adhesions to neighbouring organs were regularly present, especially to the great omentum. After weeks or months the adhesions were less numerous, but in only two cases were they absent. In one case where the serous coat was scarified after Wölfler's method the adhesions were so complicated that the seat of anastomosis could with difficulty be found. His experiments with the various forms of button were not very satisfactory. He concludes that a button must stay in a dog's intestine for at least five days in order to mechanically protect the place of anastomosis ; if it stays longer than eight days it is apt to cause necrosis. In one case a Murphy button came away on the third day just when the anastomosis required the most protection ; in another case it caused perforation on the third day. With decalcified bone bobbins things were even worse. All forms, particularly Frank's, were absorbed very early or were soon passed partially digested. Hardening in formalin or partial decalcification, gave very little better results.

Wölfler[3] gives a description of forty cases where he had used Murphy's button ; in two cases the bowel became adherent, while the button lay for weeks as an obstruction till an artificial anus was formed.

He has operated with Frank's button in six cases of bowel resection, and three of gastro-enterostomy with success, though two separated. From his own observations and experiments with dogs, he found most of the buttons labelled soluble were absorbed completely on the fifth day, whereas union could not be anticipated before the sixth day. In the discussion Jordan said in eighty cases with Murphy's button the results were superior to any other, although it is contra-indicated in the colon where the walls are thick and the fæces more readily choke the passage at this section of the bowel.

Sultan[4] describes another absorbable button. He says Frank's button may be uncertain and dangerous. The button is like Murphy's,

except that the discs are made of ivory, and the two screws, as in Murphy's, of metal. For gastro-enterostomy the discs may be covered with indiarubber to delay absorption. From experiments on dogs he finds that in gastro-enterostomy the button remains unaltered for three days, and absorption begins on the fifth day; in the human subject absorption would begin later.

MacLennan [5] describes a new method of joining intestine, which he has used successfully in rabbits; it has not yet been tried in the human subject.

Frazer [6] suggests that in simple suture of the intestine the two ends of bowel should be rotated somewhat, so that the plane of the mesentery of one segment lies behind that of the other, instead of the mesentery of each being exactly opposite the other; he thinks this would avoid any danger of leakage, as non-serous surfaces will be opposed to serous surfaces, and earlier adhesion take place.

Volvulus.—Littlewood [7] reports seven cases of this condition treated by operation with three recoveries. Four were cases of volvulus of the large intestine and three of the small intestine. The point which strikes Littlewood in cases of intestinal obstruction is the difficulty of making a diagnosis; out of the seven cases he only made a correct diagnosis in one. In none of the cases did previous constipation play an important part; in some cases visible peristalsis was noted, which was probably in the bowel above the twist. The treatment varied; in one case the volvulus was simply untwisted after letting out the gas; in two cases the anus was dilated and the contents of the volvulus and colon were simply squeezed out without opening (these two recovered) the bowel, the after-treatment consisting of saline purgatives and washing out the bowel; in another case the contents of the volvulus were evacuated after incision; in the fifth case the volvulus was simply untwisted and the pelvis drained; the volvulus subsequently became gangrenous and was removed and the intestinal continuity was restored later. In cases six and seven the intestine was opened and a Paul's tube inserted.

REFERENCES.—[1] "Lancet," Nov. 5, 1898, p. 1385; [2] "Centralb. f. Chir.," No. 2, 1899, p. 33; [3] At the "Deutschen Geselschaft," quoted in "Med. Press and Circ.," Aug. 17, 1898: [4] Supplement to No. 27 of "Centralb. f. Chir.," July, 1899, p. 99; [5] "Lancet," Feb. 25, 1899, p. 501; [6] Ibid., May 13, 1899; [7] "Lancet," Feb. 18, 1899, p. 428.

IRIS (Disorders of). *F. Richardson Cross, M.B., F.R.C.S.*

Some oculists hold that there is no direct absorption of the aqueous humour by the anterior surface of the iris, but Nüel [1] (Liege) says that this opinion is largely founded on experiments made on rabbits, in

which animals the lymph apparatus of the iris is extremely rudimentary. In cats and dogs there are numerous openings in the iris, principally in the peripheral zone and around the pupillary margin leading into interstitial lymph channels. By injecting a few drops of Indian ink into the vitreous in these animals, Nüel has shown that the ink enters largely through these stomata, and penetrates deeply into the iris. He considers that there can be little doubt that the human iris possesses a similar power of absorption.

Boucheron[2] has used injections of **Anti-streptococcus Serum** for the treatment of rheumatic iritis, with good results. He commenced with doses of ½ c.c., which were later increased to 1 c.c. daily. The treatment succeeded also in some cases of purulent iritis, as well as in others of a chronic character.

In cases of secondary glaucoma resulting from incarceration of the iris, it is sometimes advisable to divide the iris on both sides of the scar. This is usually done by two iridectomies at separate times. Lawford[3] suggests a method of freeing both synechiæ at the one operation. He passes a Graefe's knife through the edge of the cornea and the anterior chamber, so as to emerge at the opposite corneal margin, enlarges both openings, and withdraws the knife. He then divides the iris on each side of the adhesion through the openings so made, and he finds the method give excellent results.

REFERENCES.—[1] "Brit. Med. Journ.," Aug. 20, 1898; [2] Congress of Ophthalmology, May, 1898, quoted in "Treatment," Oct. 13, 1898; [3] "Brit. Med. Journ.," Aug. 20, 1898.

JAUNDICE (Surgical Treatment of). (See "Gall Stones.")

JOINT DISEASE (Gonorrhœal).

C. F. Marshall, M.D., B.Sc., F.R.C.S.

The various forms of joint disease associated with and dependent upon gonorrhœa are described by Bennecke,[1] assistant in König's clinic in Berlin. The classification adopted is that suggested two years ago by König himself, and is pathological rather than clinical. Four varieties are recognised: (1,) Hydrops; (2,) The serofibrinous form; (3,) Empyema; (4,) Phlegmonous inflammation. It is asserted that in all cases the clinical picture is in direct proportion to the pathological change.

The phlegmonous form is by far the most frequent; then comes the form hydrops. Between December, 1895, and the end of 1897, fifty-six cases were observed; eighteen were men, thirty-eight women. The ages of the men varied from twenty-two to fifty-four years; of the women, from fifteen to forty-two years. The following is the state-

ment made as to the frequency of the affection in the various joints. The knee was affected thirty-one times (seventeen right, fourteen left); the hip eight times (three right, five left); the ankle nine times (four right, five left); the foot six times (one right, five left); the shoulder four times (three right, one left); the elbow ten times (two right, eight left); the wrist six times (one right, five left); the fingers four times (one right, three left). No other joints were ever found implicated. In fifty-four patients then seventy-eight joints were affected. The upper extremity was the seat on twenty-four occasions, the lower extremity on fifty-four. Monarticular affections occurred in thirty-nine patients; two joints were affected in eleven patients. Of the thirty-nine monarticular cases the knee was affected seventeen times, the elbow seven times, and the hip seven times. In the seventeen polyarticular cases the knee was affected fourteen times, and in ten of these the affection was bilateral. In only one patient had the gonorrhœal discharge ceased when symptoms appeared. In forty of the cases the onset was sudden, and the early progress rapid. The effusion in the joint was examined from twenty-seven patients. Gonococci were found eight times. The inference is that the joint affection is probably the result of mixed infection.

The treatment adopted in most cases was **Perfect Rest**, and the liberal application of **Tincture of Iodine** to the affected joint until vesication was produced. In some cases an *intra articular injection* of 8 c.cm. of a 5 per cent. solution of **Carbolic Acid** was used. All the cases showed a marked tendency to chronicity, and to the formation of adhesions in the interior of the joint resulting in ankylosis.

Milian[2] points out that in many cases of unequivocal gonorrhœal rheumatism gonococci are not found in the joints. According to the author there are two classes of the disease: (1,) Joint lesions, due directly to the presence of the gonococci or associated microbes; (2,) Cases of nervous origin characterised by severe pain in the joints without inflammation, muscular wasting, exaggerated reflexes, fibrillary tremors, etc. The course of this form of disease is apyretic and chronic. There is much evidence in support of the view that gonorrhœal rheumatism may in some cases be due to a spinal lesion, the result of gonococcal infection.

Gonococcal Joint Disease secondary to Purulent Ophthalmia.—Clement Lucas[3] reports twenty-three cases of joint disease in infants following purulent ophthalmia. He describes two forms: (1,) Very acute arthritis, accompanied by much swelling and tenderness and suggesting suppuration; (2,) Sub-acute synovitis with effusion. Of the twenty-three cases eighteen had ophthalmia neonatorum contracted

during labour, and five cases were due to secondary inoculation in older children, the eldest being seven years.

The joint disease generally appeared in the second or third week of the ophthalmia, and affected chiefly the knees and wrists. Bacteriological examination showed the presence of gonococci in the discharge from the eyes and joints. Suppuration in the joints might be due to double infection with gonococci and streptococci, or staphylococci. The complaint differs from syphilitic arthritis in appearing earlier and pursuing a more rapid course.

REFERENCES.—[1] "Die gonorrhoische Gelenkentzündung," Berlin, 1899; [2] "Presse méd.," April 29, 1899; [3] "Trans. Royal Med. Chir. Soc.," 1899.

JOINTS (Ankylosis of). *Robert Jones, F.R.C.S.*
A. H. Tubby, F.R.C.S.

Ankylosis of Hip and Knee.—In discussing the treatment of ankylosis of the hip and knee we desire to distinguish between sound and unsound ankyloses. Contrary to the usual classification, Thomas first employed a purely clinical nomenclature. We employ the term *unsound* to an ankylosis where the inflammatory changes have not subsided, while a *sound* ankylosis implies the absence of active disease. Now, in order to understand the differential diagnosis of these two conditions we would point out that, as in tubercular joints recovered with mobility, the range of motion is not lessened by use, so in a sound ankylosis the flexion angle will not be altered by use; on the contrary, if the ankylosis be *unsound*, it constantly increases until the extreme limit of deformity is reached. The importance of the knowledge of this fact cannot be exaggerated, more especially as no reference is made to it in our text-books. It is the only way whereby a doubtful case of recovery in chronic hip or knee can be decided. For instance, a hip splint is removed from a patient who has worn it for four years; abscesses have formed and have been recovered from; pain has gone, and so has tenderness; the joint is thickened and ankylosed: the angle of deformity is accurately estimated by a goniometer, and is fixed at 15°; the patient is then allowed some freedom from restraint. If, on his return a few weeks later, the angle of ankylosis is 25°, we can safely decide we are dealing with an unsound articulation. We are not desirous of entering into detail in reference to the treatment of the deformity in unsound ankylosis, but while strongly deprecating passive movements, we would be equally emphatic that the unsound stage of the disease is that best suited for the reduction of deformity. So soon as reduction is completed the limb should be immobilised until all inflammatory

signs have gone. This may mean months or years ; in either event no exception can be made to the rule. Whatever the cause of ankylosis, whether specific, tubercular, or septic, one of two pathological conditions remains—either a bony or a fibrous bond of union. These two conditions require different treatment.

I.—Fibrous Ankylosis of the Knee.

(1,) *Without Flexion Deformity.*—There should be great caution exercised in the treatment of what one may term short fibrous ankylosis of the knee. In such a condition, although the skiagram shows the absence of bony fragments between the joint surfaces, there is only the slightest trace of movement, and the diagnosis is often difficult. In certain cases, however, where the disease has run a somewhat rapid course, where the bones are barely enlarged and the patient seems healthy, it may be advisable to bring about movement in the joint. How is this to be done without danger to the articulation? By forcibly rupturing the adhesions and fixing the joint in a flexed position, ankylosis in that position is nearly certain to result. By rupturing the adhesions without fixation inflammatory complications are invited. For some time past, in properly selected cases we have been accustomed very slowly to stretch adhesions by means of a specially constructed posterior splint. The splint is applied at first with perhaps five or six degrees of flexion, and every two or three days this is increased. If we find that at the end of a fortnight or three weeks, although the knee has slightly bent, we have a difficulty in replacing it into its extended position, we at once discard treatment. If, however, the joint can easily be extended, we know that the experiment is harmless, and we continue it until a useful range of movement results. Cases of firm ankylosis after tubercular disease have in this way often regained useful movement. Any observant or experienced surgeon will know at once if danger threatens, and can act accordingly. Those cases, not so common after tubercular disease, where a limited range of movement exists, starting from full extension, it is best to leave alone, as in a fair percentage the range of movement will increase.

(2.) *Fibrous Ankylosis with Flexion.*—This is a very frequent condition and should always be treated. It is often accompanied by subluxation of the tibia and external rotation. If the fibrous adhesions are very slight, the deformity can generally be rectified in one sitting and the joint placed in a calliper splint. In other cases, however, where the adhesions are short and firm, and where there is thickening and shortening of the posterior aspect of the capsule, a

different course must be adopted. Supposing the flexion angle measures 45°, the patient should be anæsthetised and the knee firmly pulled until the resistance is very great. By this manipulation possibly 10 or 15° less flexion may remain, and the patient is then fixed in a bed splint so designed that pressure aids gravity in still further reducing the deformity (*Fig.* 6). A week or ten days may be allowed to elapse, when the surgeon, by another effort, can usually without difficulty still further extend the knee. In firm cases with considerable flexion it may be necessary to divide the reduction into four or five of these stages with a week's interval between the different efforts. We have never seen any accident occur where these precautionary measures have been taken, while fracture of the thigh, rupture of the popliteal vein, gangrene of the limb have been directly due to attempted reduction in one stage. So soon as the limb is straight it should be fixed and rested until all signs of inflammatory reaction are past.

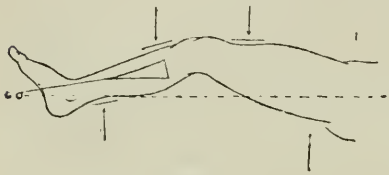

Fig. 6.

It may be laid down as a surgical axiom admitting of but few exceptions that an ankylosed deformed joint, when flexion is reduced, will have the same range of movement afterwards as before.

In a limited number of cases where subluxation is extreme and the fixation firm, the procedures advised in the case of bony ankylosis must be adopted.

II.—Bony Ankylosis of the Knee.

(1,) *Osteotomy.*—This operation, so often recommended, we would not advise in the case of the knee. If the flexion be acute, an osteotomy will result in the protrusion of the lower femoral fragment above the popliteal space. Non-union has resulted from such efforts, and where union does occur it can only be effected by very excessive callus display. In those instances where the flexion deformity is not so severe the objections to a femoral osteotomy are of a similar kind.

(2,) *Cuneiform Exsection.*—In cases of bony ankylosis requiring operation we would recommend V-shaped excision, the size of the wedge to be dependent upon the degree of flexion and upon the enlargement of the condyles. This operation has been rendered serious in the hands of some surgeons because of injury to the artery or vein. The operation usually described needlessly jeopardises

those structures, and we would recommend a safer technique. A flap is made, starting well above the condyles, either on the outer or inner side of the thigh. The line of incision should be continued on a plane a little posterior to the centre, turning almost rectangularly across the ligamentum patellæ, and thence up the thigh parallel to the downward incision. This rectangular flap should contain all the structures down to the bone. A V-shaped wedge is then removed by means of an amputation saw. It is in the removal of this wedge that care is required. The apex of the wedge should be carefully designed not to reach the posterior aspect of the bones by a good half-inch. The wedge is therefore removed before the bones are sawn completely through. A saw now all but completes the section of the bones, and the fracture is completed by flexion. The posterior sharp edges are then trimmed and the limb fully extended. This procedure renders the operation perfectly simple and safe (*Fig.* 7).

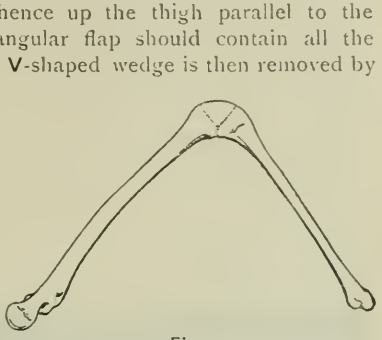

Fig. 7.

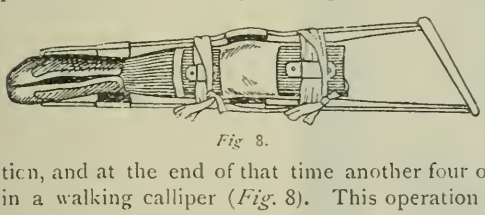

Fig 8.

As a matter of clinical experience, we would advise that fully three months should be spent in bed after this operation, and at the end of that time another four or six should be spent in a walking calliper (*Fig.* 8). This operation may be performed at almost any age.

III.—Ankylosis of Hip.

(*a*,) *Fibrous Ankylosis.*—Fibrous ankylosis is the commonest form after tuberculosis of the hip, and a surgeon is to be heartily congratulated who can steer his hip cases through the storm without any flexion deformity remaining. A surgeon should be sufficiently *au fait* with mechanical processes never to be content with over 10° of flexion, but if the cases which frequent our out-patient rooms be examined, we will find amongst the cured cases deformity ranging anywhere between 30 and 60°.

Unsound Fibrous Ankylosis.—Unsound ankylosis of the hip should be treated on the same lines as in the case of the knee. Many surgeons have the greatest possible fear of straightening any limb

from which tubercular activity has not disappeared. This is quite contrary to our experience, for we look upon the active stage as that most appropriate for reduction on account of the comparative facility with which it may be effected. If a hip has recovered without deformity, although the ankylosis is not bony, we do not advise any attempt at securing movement no matter how carefully conducted. Such attempts almost inevitably fail, and are very apt to result in flexion. This is due to the starting of fresh inflammatory trouble which we cannot mechanically govern, as fixation would antagonise the very object of the operation.

In cases of ankylosis where flexion is uncomplicated either by adduction or internal rotation, we forcibly extend the thigh as far as it can be safely done. The limb is then affixed in a Thomas's hip splint where reduction will shortly be completed. If the ankylosis is firm, this operation, as in the case of the knee, may have to be repeated. Little fear of inducing tubercular trouble may be felt. In the case of an unsound ankylosis, after the limb is straight it should be immobilised until sound, and in the case of a sound ankylosis it should be kept immobilised for nine months so that there may be no danger of recurrence. Where an unsound ankylosis exists with flexion, pelvic tilting, adduction and internal rotation, our efforts should be directed to preventing or to lessening the extent of displacement of the head. This sometimes even necessitates the use of pulleys. The force that governs this displacement generally suffices to rectify pelvic obliquity, while the flexion can be overcome by ordinary methods. If the case be of long standing and the structures around the hip joint are much thickened, two or three efforts may be required at intervals of about a week. The patient should then be placed in an abduction splint (*Fig.* 9) so

Fig. 9.

designed as to effectively prevent the slightest tilting of the pelvis in any but the direction of advantage to the diseased side.

Sound Fibrous Ankylosis.—This may be accompanied by movement or not; in either case similar treatment is indicated. If we merely desire to overcome a flexion deformity, we, as a preliminary, fix the pelvis. This is best done by acutely flexing the good thigh on the abdomen. In tough cases, to prevent fracture of the thigh we place two or three splints along the shaft. The affected limb is now slowly extended to the usual accompaniment of rupturing adhesions. After the flexion is diminished by 20 or 30° it is advisable to stop, and, having applied a posterior splint, bandage the limb to it. During the next few days the lordosis diminishes, and in a week it may be necessary to repeat the forcible manipulation. We would here draw attention to a simple method of roughly finding out the flexion angle without removing the splint from the body. The affected limb being bandaged to the hip splint, the healthy thigh is flexed upon the abdomen. If the thigh can be made to lie on the abdomen there is no flexion deformity on the opposite side; if not, then the angle formed between thigh and abdomen gives us roughly the actual flexion of the other thigh. When the flexion is very acute a double Thomas may be preferred to the single.

Where the ankylosis is accompanied by adduction, internal rotation, etc., in addition to flexion, a systematic use of the pulley may be necessary in all but children. This is applied to the affected limb, and some of the flexion having been already overcome, a perineal band is placed on the opposite groin and steady traction is maintained. This should be continued until the apparent length of the limbs, as measured from the umbilicus, is equal. If easily secured, a lengthening of the diseased side is to be preferred. The limbs should then be placed in the abduction splint and the advantage maintained.

The weight and pulley is a very inefficient means in the reduction of angular deformity. From a mechanical point it is not nearly so efficient as posterior leverage. No one would dream of straightening a convex rod of iron by pulling at both ends when it can be so much easier effected by placing the knee against it. Furthermore, we notice that few surgeons place sufficient reliance in forcible strain of a flexed joint with intervals during which such strain is mechanically maintained. To prove the exceeding practical value of this theory applied, we would refer to traumatic injuries of the elbow where the articulation is left at a useless oblique angle. The patient is anæsthetised and the surgeon attempts to flex it. In this he succeeds to a limited extent, when any further force would only mean fracture.

The arm is maintained for a week in the improved angle, and at the end of that time 10° or more can be easily secured. After a few such manipulations a useful flexion is attained. The same is the case with an ankylosed hip ; divided into stages an almost impossible deformity is reduced.

(*b*,) *Bony Ankylosis with Flexion only.*—It is very rare to have flexion unaccompanied by pelvic tilting, internal rotation, and adduction. A simple osteotomy is all that is needed. Radiography may help the surgeon to decide whether he performs a supra-trans- or infra-trochanteric section.

Bony Ankylosis with Short Leg, Adduction, and Pelvic Tilting.—This is by far the most important class of case and occurs in those cases cured of their hip disease, some children, some adults, who may have shortening varying from two to six inches. The treatment of such cases has been a problem to surgeons in all countries, and we can recommend a mode of procedure based upon a large number of cases which has yielded most excellent results. We have operated already upon many children and adults, and can speak most hopefully of the results. Osteotomy, as we know, has been practised for years to overcome the deformity of flexion. Rhea Barton performed it in 1826, and he was soon followed by Clemmot, Rodder, Maisonneuve and others. Adams first performed the operation subcutaneously by dividing the neck of the femur. The other operators worked lower down, but only Gant divided below the lesser trochanter. Probably Gant's operation is the most popular to-day, but we prefer that of Adams', if we only have to deal with the deformity of flexion. Although something must be said in favour of a section which cannot be interfered with by a shortened psoas and iliacus, yet we have found that in cases of right-angled deformity of the hip the upper part of the femur left fixed after Gant's incision has an ugly way of encroaching upon Scarpa's triangle. Of this we are also certain, that even if an osteotomy incision be made through inflamed tissue, as must sometimes occur in Adams' operation, union is not in the least hampered. With a view of not merely rectifying a flexion angle which has been the general object of a femoral osteotomy, but with the intention of lessening or obliterating adduction with pelvic tilting, we make an incision obliquely through the great trochanter (*Fig.* 10). This often involves hard work because of the thickness and the sclerosed condition of the bone. The work is much facilitated by having a

Fig. 10.—A, B. Line of section through trochanter.

small knob on the end of the saw, such as one which Weiss has made for us (*Fig.* 11). One can saw with much more energy when there is no danger of either transfixion or of losing one's place. It is better where practicable to saw completely through the bone rather than a certain distance, and we prefer going through the trochanter because of extra callus exudation, as an ununited fracture will frustrate the object of the operation. The adductors are next divided when needed, and in the case of a youth or adult traction is applied by means of pulleys. Very often an inch or an inch and a half may be gained by this traction (*Fig.* 12), and in this way some of the shortening of actual displacement may be combated. The leg, still fully extended, is placed at an angle of abduction which varies with the degree of pelvic tilting. The greater the tilting the greater should be the abduction. The pelvis on the sound side is fixed and the abduction splint is applied, and extension and abduction are maintained (*Fig.* 13). Seven or eight weeks are allowed to elapse, until, in fact, bony union is completed with the limb in abduction and at an angle with the body.

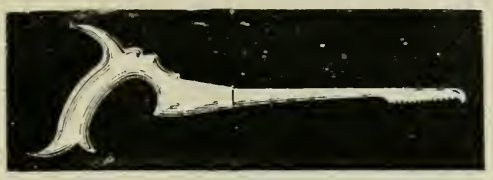

Fig. 11.

Fig. 12.—C. Lengthening after traction.

It is now to be noted that the length of the limbs may be equalised in one of two ways, or by a combination of both ways, either by lessening the practical length of the sound limb or increasing that of the short one. By osteotomy and extension the leg is actually lengthened (*Figs.* 14, 15, 16, 17, 18), and by the osseous union of the femur in abduction with the pelvis the elevation of the pelvis on the opposite side is effected. With an outstretched thigh in one piece with the trunk it is clear that the limb can only be adducted at the cost of elevating the pelvis on the sound side, and in this way several inches of shortening may be remedied (*Figs.* 19 and 20).

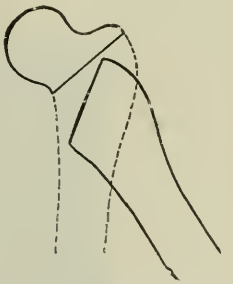

Fig. 13.—Position of fragments when limb is abducted.

A more difficult class of case to deal with is that where short and

firm fibrous union obtains. In such cases we are accustomed to divide the adductors and extend and forcibly abduct, and if attempt

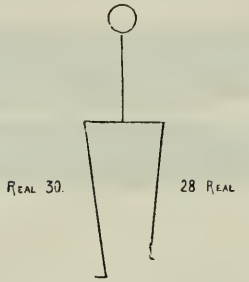

Fig. 14.—Showing 2 inches real shortening.

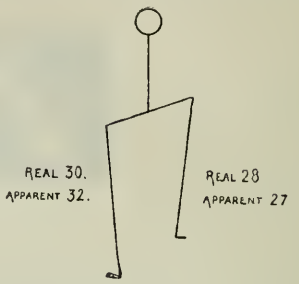

Fig. 15.—Tilting of pelvis, showing real and practical shortening from pelvic obliquity.

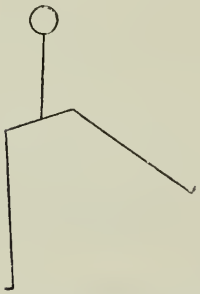

Fig. 16.—Position of leg after trans-trochanteric osteotomy.

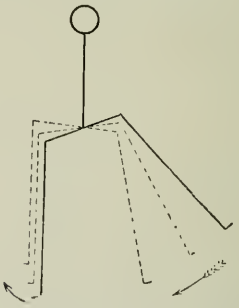

Fig. 17.—Showing elevation of pelvis on sound side, by bringing abducted leg into position.

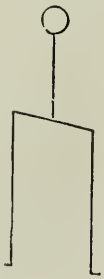

Fig. 18.—Showing final result with adduction of leg and elevation of pelvis of sound side.

at lateral movement threatens fracture, we perform an osteotomy as if for bony ankylosis ; indeed, it is better in such cases to proceed forthwith with osteotomy rather than complicate the issue by forcing the fibrous bands. Such cases require to be kept much longer in a splint than do those where the fixation is bony, and in two or three instances, from a want of experience in this matter, the early removal of restraint has resulted in some return of deformity. It might be supposed that this fibrous union would still allow the adductors to act, no matter how long the restraint and stretching, but this is not so, provided sufficient abduction is obtained to counteract any subsequent slight fibrous contraction. If the limb be abducted for a sufficient length of time further contraction is not likely to occur, and this accords with what may be assumed to be a surgical axiom, that a deformed limb due to arthritis retains the same degree of movement after correction as it possessed before, and that if ankylosed at the moment of rectification it is equally ankylosed when reduction is completed. When the splint has been removed the patient should be confined to bed for some time until the abducted limb is gradually brought into position, and

Fig. 19.—Showing 4½ ins. shortening.

Fig. 20.—Showing the previously short leg the longer after operation.

exercises should be prescribed designed to elevate the pelvis on the sound side and depress it on the diseased side. These exercises are

very necessary adjuncts, and in the case of adults especially, because they materially improve the character of the walk.

We do not now enter into the question of pseudo-arthrosis except to state that its results in our experience are most uncertain, and that by its attainment the rectification of deformity is not at all complete. We now almost exclusively employ it for the relief of double ankylosis. Of the cases of bony ankylosis upon which we have operated by the trans-trochanteric osteotomy with abduction, we will merely briefly state that in most of the cases the practical shortening has been obliterated, and that in the rest it has been lessened almost to the point of disappearance. Suppuration has not occurred, nor have there been any symptoms of gravity.

JOINTS (Disorders of). *Priestley Leech, M.D., F.R.C.S.*

Internal Derangements of the Knee-joint.—Walsham[1] classifies the causes of internal derangements of the knee-joint as follows: (*a*,) Loose bodies; (*b*,) Detachment or displacement of the semi-lunar cartilages; (*c*,) Enlargement with nipping of hypertrophied synovial fringes; (*d*,) Elongation of the ligamentum patellæ. All of these conditions may be attended with similar symptoms, the most obvious sign, as a rule, being the synovial effusion. The diagnosis of the actual condition may be difficult or impossible without opening the joint; it must be remembered that more than one hypertrophied synovial fringe may be present. In some cases an apparatus limiting the movements of the joint may suffice, but in other cases an operation is indicated. Where the patient is unwilling to give up athletic exercises, or wishes to enter one of the services, or has to go abroad, or is engaged in such occupations as necessitate mounting ladders, scaffoldings, etc., where the breaking of the instrument and locking of the joint might subject him to a serious accident, an operation should be done. The following precautions should be observed:—

(*a*,) Preparation of patient. Confinement to bed or couch for three or four days or a week before operation, the limb being secured to a MacIntyre or other back-splint. Get rid of any synovial effusion before the joint is opened. Render the skin in the neighbourhood of the incision thoroughly aseptic.

(*b*,) Arrest of all hæmorrhage before the capsule is opened by forci-pressure, torsion, or ligature; cleanse joint after operation from all blood clot by thoroughly flushing out the cavity with a warm **Mild Antiseptic Lotion,** such as a boracic acid.

(*c*,) **Accurate Suture** of the synovial membrane and capsule. The serous surfaces of the synovial membrane should be placed in contact and the capsule drawn together by a continuous suture.

(*d*,) **Absolute Rest** on a well-fitting back-splint till the skin wound is soundly healed, firm pressure being applied by a bandage over the joint to prevent oozing.

(*e*,) Early passive movements and **Massage**. These are usually begun on the fourteenth day, the patient being up and about on the twenty-first day. This prevents the formation of adhesions, whilst the massage promotes absorption of any excess of inflammatory products in the healing of the wound.

Walsham has found this early movement and massage particularly serviceable after wiring patellæ for fracture. For elongation of the patellar ligament, he recommends cutting off of the tubercle of the tibia and transplanting it the required distance lower down the tibia, where it is fixed by the insertion of an ivory peg.

Arthrotomy.—Lockwood [2] has some interesting notes on cases where he has opened joints for various conditions.

Three cases of arthritis of the wrist-joint, where great pain was present are quoted ; the joints in all three cases were opened on the dorsum between the extensor tendons, and drained for a day or two. The relief to the pain was very marked. He has also operated in three cases of osteo-arthritis for removal of loosed fringes ; two gave excellent results ; in the third case the stiffness was more marked after the operation.

REFERENCES.—[1] "Brit. Med. Journ.," July 29, 1899, p. 261 ; [2] "Lancet," May 20, 1899, p. 1205.

KIDNEY (Moveable). *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

Ever since Landau's famous paper moveable kidney has been a favourite subject; it is discussed frequently, diagnosed even more frequently, and very seldom successfully treated. Its occurrence in women has been stated to be so common as to be recognisable in 40 per cent. of the patients at the out-patient department of a women's hospital, and it is a favourite doctrine to attribute its occurrence to the much abused corsets of civilised femininity. It is therefore pleasant to the mind jaded with the monotonous etiology of the corset haters to learn that the condition was found to exist among the Samoan women of an exhibition troupe staying in Berlin, who are quite innocent of the vices of European dress. Becher and Sennoff,[4] who examined twenty-four of these women, came to the conclusion that the chief cause of renal mobility is a long, slender body. The greater the length, and the smaller the abdominal circumference, the more certainly may we expect to feel the kidney. They have established the following formula :—

$$\text{Index} = \frac{100 \times \text{Jugulo-pubic distance}}{\text{Abdominal circumference.}}$$

The jugulo-pubic distance is from the sternal notch to the upper border of the symphysis pubis. The healthy index is given as 75, below which palpable kidneys are not to be looked for. Comby[2] has found mobility of the kidney fairly common in children, and has attributed it to congenital causes or injury. As already indicated, the treatment of this condition is not very satisfactory. A great many of the patients in whom it is present are neurasthenics, for whom it is a great misfortune to be told that they have a loose kidney.

In many instances the subjective symptoms do not depend upon the renal mobility, and Einhorn[3] is right in saying that operative procedures to fix the organ in its place are not necessarily followed by improvement in the patient's condition. The best course to follow is to cure the neurasthenia by prolonged **Weir-Mitchell Treatment,** and when the patient is allowed up she should wear a comfortable abdominal belt.

REFERENCES.—[1] "Deut. med. Woch.," xxlv, p. 32, 1898; [2] "Brit. Med. Journ.," vol. ii, p. 1154, 1898; [3] "New York Med. Record," vol. ii, p. 220, 1898.

KIDNEY (Surgery of). *E. Hurry Fenwick, F.R.C.S.*

Obscure Hæmorrhage from a single Kidney, and its Cure by Nephrotomy.—Thorkild Rovsing,[1] of Copenhagen, contributes a most interesting paper on this subject. At the end of the last and the beginning of the present century there was considerable talk of "hæmaturia sine materia," or "essential" genuine hæmaturia. Since in later years operations upon the kidneys have become more frequent, the question of genuine hæmaturia has once more come to the front. This is due to the circumstance that surgeons operating for the removal of stone, tumour, or tuberculous deposits, supposed to be the cause of the bleeding, found the kidney apparently healthy. In some cases the kidney has been removed, the bleeding has ceased, but the microscopical examination has shown no pathological changes. Many cases of "hæmaturia sine materia" have been reported of recent years. These are described sometimes as "renal hæmophilia" (Senator, Broca, Passet), sometimes as "hæmorrhage of anatomically unchanged kidneys" (Piqué, Reblaud, Grosglik), as "hæmaturic neuralgia" (Leguen), and by Klemperer even as "hæmaturia from a healthy kidney." These authors cannot explain the bleeding in other ways than by supposing the existence of a "local hæmophilia," or an "angio-neurosis." This latter hypothesis (Leguen, Broca), that the bleeding should be caused by a nervous disposition in the patient, seems now, since Klemperer has adopted it, to be predominating.

A critical study of the cases reported in literature shows that the majority of them are most doubtful as cases of "hæmaturia from a healthy kidney." It is clear that before such a diagnosis can be pronounced, every possible means ought to be taken to ascertain, first, whether the bleeding really comes from the kidney; and, secondly, whether the possibility of morbid changes of the kidney is absolutely excluded.

The cases reported in literature fall into two groups: (1,) Those which have been exclusively under medical treatment; and (2,) Those in which the kidney has been the object of palpation, incision, or removal through operation.

The cases in the first group are quite useless in deciding the question, because there is no cystoscopic examination, and no necropsy of the kidney. It is, therefore, quite impossible to say whether the bleeding was due to the kidney, the bladder, or some other part of the urinary tract, or whether the kidney really was healthy.

Therefore, we are restricted to the second group in searching for proofs of the existence of hæmaturia from "healthy kidneys." By critically examining the twelve reported cases of this kind, it will be found that very few—in the author's opinion only two (Schede and Klemperer) are in any way convincing. In the two cases named, the hæmaturia ceased after removal of the kidney, the microscopical examination of which gave a negative result, and no other cause of the bleeding was discovered.

In the case observed by Senator and Israël, histological examination of the removed kidney showed "interstitial inflammatory areas"; in Lauenstein's case there was oxaluria and a distension of the pelvis, in which no blood was found (probably a stone was impacted in the ureter); in Sabatier's case there was chronic albuminuria, bacteruria, and the microscopical examination of the removed kidney showed "traces of interstitial inflammation and sclerosis"; in Anderson's there is notice of pus in the urine; in Broca's, epithelial and granular cylinders of renal epithelium—in short, nephritis; in the cases of Israël, Piqué and Reblaud, it is distinctly stated that the kidney was both displaced downwards and movable.

In none of all these cases has a bacteriological examination of the urine been carried out, and as it is now a well-known fact that urinary infection without suppuration is not rare, it must be admitted that the possibility of infection is not at all excluded, even in the cases where blood without pus was found in the urine. Finally, in the cases where the kidney was supposed to be normal, no notice is taken of

the possibility that it may not be the kidney at all, but perhaps the pelvis or the ureter which has been the seat of the bleeding. Thus the fact that the blood by cystoscopic examination is seen to come from the orifice of the ureter does not prove that the blood originates from the renal tissue.

Rovsing cites fully four cases of his own which presented certain features of "essential hæmaturia." In two of the cases the kidney was found to be displaced downwards, and the urine infected by bacterium coli. Thus there were two morbid factors, either of which might be supposed to play some part in the origin of the hæmorrhage, therefore two possible explanations to discuss. It would be natural to turn first to the infection as the actual cause of the bleeding, as it is a well-known fact that infectious nephritis can cause even considerable hæmaturia. But such a hypothesis must be abandoned if we take into consideration, (1,) That the tissue of the kidneys showed no signs of nephritis either macroscopically or microscopically; (2,) That the operations (nephrotomy with removal of portion for examination) were followed by immediate and complete cure, whilst, in case of inflammation, it would be more probable that the extensive traumatism of the kidney would give rise to a new and severe inflammation.

If we now consider the other pathological condition, the displacement of the kidney, we shall at once find an argument in its favour in the excellent effect following the operation. In both cases the kidney was replaced and fixed in its normal position, and the circumstance that the bleeding ceased at once, directly after the kidney was replaced, is a clear proof that it was in some way or other, due to displacement.

This can be explained in two ways: (1,) Torsion of the pedicle with its vessels may cause a venous stasis in the kidney and rupture of small veins; (2,) Bleeding from the walls of the pelvis by retention (intermittent acute hydronephrosis). It is a well-known fact that bleeding from the bladder may arise, if the bladder be suddenly emptied after retention, and experiments upon animals have proved that ligation of the ureter always results in rupture of vessels and formation of ecchymoses in the parts of the mucous membrane lying immediately above the ligature. Something similar can be imagined to take place in cases of movable kidney, where a bend or twist of the ureter suddenly stops its passage, and where after retention and dilatation of the pelvis for hours or days, the pelvis is suddenly emptied.

A displaced kidney has been found in a number of the cases published as "neuralgic hæmaturia," or hémophilie rénale.

It is probable that a sudden invasion of the kidney by a great number of microbes may give rise to a passing hæmaturia without other effects. In one of the author's cases the real cause of the bleeding was found to be the traumatic effect of the patient's stays, the superior pole of the kidney having been pressed between the liver and ribs. The diagnosis of these "neuralgic bleedings" should, according to Klemperer, be easily formed: (1,) By excluding the usual causes of hæmorrhage (stone, tumour, tuberculosis); (2,) From the patient's nervous constitution; (3,) Ex-juvantibus, that is, if the bleeding ceases after hydrotherapeutic treatment. Klemperer, therefore, declares that exploratory or curative operations are not permissible in cases of this kind.

Against this opinion the author most strongly protests, because: (1,) If operation is not performed in such cases, we may never exclude the most serious of the most usual causes of hæmaturia, the presence of a malignant tumour in the kidney. It is by making an exploratory incision in all cases of obscure hæmaturia from one kidney that we have in latter years succeeded in making a number of cures by an early extirpation of malignant renal tumour; (2,) The author's cases prove that even if the usual causes of hæmorrhage can be excluded, another unexpected and rare cause may in most cases be discovered and remedied by operation. It may be supposed that in a great number of apparently obscure bleedings, a displacement with torsion of the pedicle and bending of the ureter, or a traumatic injury of the kidney from the stays is the cause; (3,) Exploratory lumbar incision is attended with so few dangers that it cannot be compared to the risk run by leaving the patient with the possibility of malignant tumour. When we add to this that exploratory incision, even when no disease can be found, causes the almost immediate and definitive cessation of an hæmaturia, which in many cases is extremely dangerous, it becomes an absolute duty to examine the kidney carefully by means of an operation in every case in which hæmorrhage from a single kidney has been proved by cystoscopy to be in progress.

Renal Tuberculosis and its Surgical Treatment.– Collmt,[2] from a study of reported cases, came to the conclusion that tubercle may begin in any part of the urinary tract primarily except the ureters, and that one out of eighteen cases of tuberculosis begins in the genito-urinary organs. Camayo states that in most cases tuberculous disease of the urinary system is primary in the kidney: and James Israël expresses his conviction that a primary disease of the kidney is very much more frequent than is supposed. Hurry Fenwick[3] states that the kidney and ureter are primarily affected in 16·8 per cent. of

cases of urinary tuberculosis. But it is chiefly in numerous and valuable papers by Tuffier, and especially in a recent pamphlet,[4] that we find the strongest evidence and most strenuous arguments, hardly admitting of denial, brought forward. Tuffier, without hesitation, affirms the existence of a primary renal tuberculosis. The classification given by him of the various forms of tuberculous disease is as follows: (1,) Miliary tuberculosis, (*a*,) nodular infiltration with or without cold abscess; (2,) Tuberculous infiltration, (*a*.) tuberculous pyelonephritis; (*b*,) massive degeneration of the kidney; (*c*,) tuberculous hydronephrosis.

In both primary and secondary diseases, the condition of the ureter, due to the spread of the disease upwards or downwards, is, Tuffier insists, of chief importance but frequently overlooked. When the ureter is permeable or enlarged—an infrequent condition—the kidney enlarges little if at all. When narrowed, there results a pyelonephritis with distension, or a pyonephrosis with intermittent emptying. If obliterated, there develops either a massive degeneration of the kidney or a tuberculous hydronephrosis.

Diagnosis is often difficult, but great advance has been made since Simon, Pawlik, Nitze, Caspar, and Kelly have perfected the methods of ureteral catheterisation. An S-shaped arrangement of tubercle bacilli has been asserted by Frisch to be peculiar to kidney disease, and other observers believe this sign is of importance. In doubtful cases it has been suggested that an exposure of the kidney and the removal of a fragment of it for subsequent microscopical examination, might be a valuable aid in arriving at a certain diagnosis. Operation may be called for by the urgency of one or other of the chief symptoms, hæmaturia, pain, and so forth, but as a general rule, it is the cumulative evidence, subjective and objective, upon which intervention is founded. Nephrotomy, nephrectomy, partial or complete, and combined or not with a removal of the upper portion of the ureter, are practised. In one case Trendelenburg successfully removed the kidney, ureter, and a portion of the bladder, but hardy operations of this kind are of doubtful utility, and better left in "splendid isolation."

The following are the chief statistics of importance that have been published recently. Viguerou[5] collected fifty-five nephrotomies from the literature, and classified them as :—

Deaths—Twenty-one cases.	Seven as distinct result of operation	= 12·72 per cent.
	Fourteen after some weeks	= 25·44 ,, ,,
Relieved—Thirty-one		= 56·36 ,, ,,
Cured—Three		= 5·45 ,, ,,

Palet[6] collected one hundred and thirty-six nephrectomies :—

Primary Nephrectomy—One hundred and ten cases.
- Deaths from operation, thirty-two cases = 29·00 per cent.
- ,, after some weeks, forty-two cases = 38·18 ,, ,,

Secondary Nephrectomy—Twenty-six cases.
- Deaths from operation, six cases = 23·00 ,, ,,
- " after some weeks, nine cases = 34·60 ,, ,,

Israël, 1896, in eleven consecutive cases : –

Nephrectomies
- Total
  - Deaths, two cases - - = 18·18 per cent.
  - Relieved, five cases - - = 45·45 ,, ,,
  - Cured, three cases - - = 27·27 ,, ,,
- Partial, one case recovered.

The partial nephrectomy was the first operation of the kind practised. The upper half of the kidney was removed. The woman was well and five months pregnant one year after the operation.

Tuffier's latest statistics are :—

Nephrectomy, seven cases.
- Deaths from operation, two cases.
- Relieved, three cases.
- Cured, two cases.

Nephrectomy, nine cases.
- Primary
  - Total, six recoveries.
  - Partial, one recovery.
- Secondary, two recoveries.

These last results, mentioned by Tuffier at the Moscow Congress, are the best so far recorded. In the discussion which followed his paper, Küster, Jounesco, Israël and d'Antona gave expression to opinions coinciding with those of Tuffier as to the advisability and propriety of surgical intervention in suitable cases of renal tuberculosis, whether primary or secondary.

Kidney-Calculus—Diagnosis by means of the Röntgen Rays.—Dr. Charles L. Leonard[7] records certain advances in kidney skiagraphy. Early recognition and removal by operation of a stone in the kidney is the means of saving many a kidney. Unfortunately the early symptoms and physical signs are insufficient, and hardly justify exploratory incision. The solution of the doubt, if left to the Röntgen-rays, is fraught with difficulty, and is rarely successful, owing to the fact that the kidneys lie in a region of the body having great relative opacity to the rays, and rays of sufficient power to penetrate these parts more readily penetrate the calculi commonly present. Improvement, however, in the tubes and apparatus employed, have led, in the writer's hands, to such successful results that they will be more employed and more relied upon in future. The tubes employed are of a self-regulating variety, exhausted to a high vacuum but capable of maintaining themselves at a low vacuum through these powers of

self-regulation, and by testing the spark gap it is possible to repeat the condition found most favourable; thus rays capable of penetrating the more opaque portions of the body, but also of differentiating between less opaque structures, can be employed. The coil itself must be energised by a current of high amperage and voltage, *i.e.*, a good "feet" spark is essential. Employing these methods, in one case two calculi were discovered and their relative position determined; in a second case a stone was found partially encysted in the upper calyx, and in a third case calculi were found in both kidneys. The Röntgen-rays, therefore, are often capable now of giving definite information in doubtful cases, and in a well-marked case of confirming the diagnosis, and fixing the situation of the calculus, and finally of preventing an exploratory and useless operation being undertaken in a case where apparently the symptoms are characteristic of renal lithiasis.

Abbe[8] has collected twenty-five cases in which renal calculi have been detected by means of Röntgen rays before operation, and has added two illustrative cases of his own, one of which is worth quoting.

A man, aged twenty-seven, had had attacks of right renal, right lumbar, and glans penis pain for fifteen years. During the past five years he had been incapacitated with frequently recurring attacks, and during the last month he had had pain every day. He had several times passed blood. A fifteen minutes' exposure to X-rays demonstrated an unmistakable renal stone shadow. On delivering the right kidney on to the loin, Abbe failed to detect any sense of hardness, nor could the finger in the open pelvis detect any stone. After some minutes of searching with a metallic searcher, the grating of a calculus could be felt, but not located. At one time it would be felt only when the probe passed down the ureter, and another time when the probe was in the pelvis of the kidney.

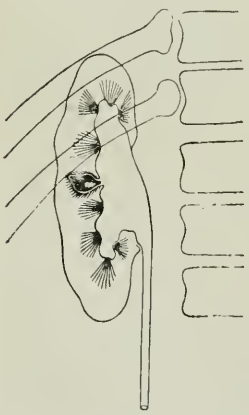

Fig. 21.—Diagram of stone fixed in cortex of the kidney—demonstrated by the X-ray.

This puzzling search to determine its exact position, with many attempts to grasp the gritty points with curved forceps, occupied at least twenty minutes to half an hour; finally the probe slipped into a small opening, at which a small sharp point of the stone presented into the pelvis (*Fig.* 21).

Along this a curved bistoury was introduced, and the kidney tissue split up, after which the stone was quickly extracted. The stone was oval, one-half inch in its largest diameter, and quite black. Mixed oxalates and urates. Patient made an interrupted recovery, and since has been absolutely free from pain.

Abbe makes the following valuable remarks :—

The most useful plates are often those which at first sight seem failures.

A wet plate may show nothing, but when dry and held in a proper light gives good results.

A thin plate, looked at in broad daylight, shows nothing, but when held in front of a brightly illuminated sheet of clean paper, will give good shadow pictures.

A thin plate will often display shadows, when moved rapidly from side to side under proper illumination, which would not appear to the observer when it is held quiet.

A dense plate that seems impenetrable, will sometimes reveal exquisite detail of bone, etc., when illuminated correctly, either by direct or reflected sunlight, with a proper screening of the observer's eye.

A properly-closed box, like a fluoroscope, adapted to the size of the picture, screens the observer well, and allows him to interpret shadows correctly.

Photographs never show as well as a study of the negative itself.

Criticism by Editor.

It is to be remarked that kidneys have been negatively opened from end to end to find a stone which the X-rays were supposed to show most clearly. The writer saw such a case two days ago. A colleague had negatively explored a right kidney. After the exploration, an X-ray was taken of the organ, and a clearly defined stone shadow was discovered. The patient was again anæsthetised and the kidney split from top to tail, as in the *post-mortem* room, but *negatively*. In criticism of which I venture to remark that we know nothing of the shadows which wounds may cast. One fallacy may occur, viz., that wounds which have been plugged with iodoform gauze or sprinkled with that or other powders, may cast shadows. On this subject knowledge is greatly needed.

References.—[1] "Brit. Med. Journ.," May 19, 1898; [2] Ibid., Oct. 1, 1898; [3] "Brit. Med. Journ.," p. 398, 1899; [4] "Tuberculose rénale," by W. Tuffier, Paris, Massau et cie, 1898; [5] "Thèse de Paris," 1891; [6] "Thése de Lyon," 1893; [7] "Phil. Med. Journ.," Aug. 20, 1898; [8] "Ann. Surg.," pt. 80, p. 178.

KNEE JOINT. (See "Joints.," pp. 292 and 302.)

LABOUR. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Dilatation of the Cervix.—When this is required in order to induce abortion, Perlsee[1] advocates the introduction of **Nitrate of Silver** above the internal os. He adopted this plan in four cases of pregnancy complicated by nephritis and uncontrollable vomiting. The stick should project about one-half inch from the holder so as to disinfect the cervical canal as it is introduced. Pains came on in from two to six hours after the cauterisation.

When artificial dilatation is required in order to expedite delivery, Demelin[2] recommends **Bimanual Dilatation,** inserting one or more fingers of each hand within the cervix and gently enlarging the os, until all the fingers can be introduced.

He employed this method in treating eleven cases of vicious insertion of the placenta and had among these patients no deaths. In eclampsia the method has given him satisfactory results. It is, of course, to be employed only when labour has already begun. If the patient shows no signs of labour, the eclampsia and toxic condition present must be treated independently of labour. If, however, such treatment produces no improvement after a reasonable time, labour ought to be induced.

He recommends this method in sudden death or threatened demise of the mother, in place of Cæsarean section. It may occasionally be employed together with other operations, as before symphysiotomy, and often before the high application of axis-traction forceps.

Kleinhaus[3] reports a series of seven cases where it was imperative to end labour rapidly, in which good results were obtained by placing the colpeurynter in the uterus, and thus securing prompt delivery. He considers this method useful in eclampsia when dilatation has already commenced. Where there are pathological changes in the uterus the use of elastic bags is not advisable, for labour pains may become weaker instead of stronger under their use. In abortion, where it is necessary to dilate the uterus, solid dilators are better. Bags made of inelastic material are most efficient.

Placenta Prævia.—Fournier[4] considers that the best treatment in the last three months of pregnancy consists in the induction of labour and version. Two principles are laid down in support of this treatment. First, unless these cases are interfered with, the patient runs a great risk and may die from loss of blood. Second, if the uterus is empty it will contract upon the vessels and the danger from hæmorrhage will be removed. To be effectual, treatment must be prompt and under rigid antisepsis.

Delivery of the After-coming Head.—In three cases of contracted pelvis Radojewski[5] adopted the plan of breaking up the brain through the vertebral canal and washing away the brain substance with a current of water. In one case, in which a midwife had pulled away the body from the head, he passed a uterine sound into the skull through the spinal foramen, broke up the brain, passed an elastic catheter into the skull, attached it to an enema syringe, and injected water till the brain was washed away, after which the head was easily removed with the hook. In a case of transverse presentation in a primipara, whose conjugata vera scarcely exceeded five centimètres (two inches), he turned, but the head could not be extracted by moderate traction and external pressure. As the child was dead he divided the spinal column between the second and third dorsal vertebræ, broke up the brain partly with a catheter and partly with a wire introduced through the spinal foramen, and washed away the brain with water, after which the head was easily withdrawn.

Radojewski has now devised an instrument for the purpose, which is made by Evens and Pistor, of Cassel, called the **Cerebrotome Aspirator.** It consists of a tube a foot long containing a spring $3\frac{1}{4}$ in. long, which projects more or less beyond the tube as may be required. The spring is used to break up the brain, is then withdrawn from the tube to which a syringe half full of water is attached, and the brain substance is removed by alternate injection and aspiration of the water.

Treatment of Brow Presentations.—Conversion into a face presentation may be regarded as a fairly favourable termination, and Solowieff[6] describes a plan of converting an original brow into a face case, which he considers new and original. Five cases are given in detail, illustrating this plan, which consists in introducing the fore-finger into the child's mouth, and thus drawing the chin towards the brow, and retaining the finger here till a pain fixes the head in the new position. He recommends this method on account of its (1,) simplicity, (2,) avoidance of injury, (3,) diminished danger of infection as compared with the operation of turning, and (4,) favouring rapid termination of labour.

REFERENCES.—[1] "University Med. Mag.," Nov., 1898; [2] "L'Obstétrique," 1898. No. 4; [3] "Monatssch. f. Geb. u. Gyn, 1898, Band vii., Heft 2: [4] "L'Obstétrique," 1898; [5] "Deut. med. Woch," Oct. 20, 1898; [6] "Centralb. f. Gyn." 1898, No. 30.

TREATMENT OF THE NEW-BORN.

Treatment of the Stump of the Umbilical Cord.—Budberg[1] advocates his method as employed in the clinic at Dorpat. He has used it in two hundred cases, and finds it the best which he has yet tried.

It consists in wrapping the stump of the cord in cotton soaked with alcohol. When it is possible to obtain it, pure alcohol should be employed. A thin layer of cotton is placed over the whole. The advantages claimed for this method are the fact that the cord dries absolutely in an aseptic condition, that suppuration does not occur, and that the cord promptly separates.

The Effects of Bathing upon the New-born Infant.—Czerwenka[2] has studied a series of four hundred new-born infants, half of whom were bathed regularly after birth ; the other half were not bathed. He found that bathing did not materially interfere with the desiccation of the cord, since the latter fell during the first seven days in 80 per cent. of those bathed and 94 per cent. of those not bathed. The danger of infection of the umbilical wound is not great, since it was observed only once in the two hundred cases. As to increase of weight, independently of the conditions of alimentation, the average has been found to be slightly greater among the infants who were bathed than among those who were not. The author concludes that regular bathing should be practised from the time of birth.

The Treatment of Asphyxia Neonatorum.—In the milder or livid stage of this condition, Fry[3] recommends that in the first place the cord should be cut and a little blood permitted to escape. The infant should be suspended for a moment by the heels to facilitate the gravitation of mucus from the throat and trachea. The finger passed quickly into the pharynx removes the secretion and excites respiratory effort. The cutaneous reflexes may next be excited by slapping the surface with the palm of the hand or a wet towel, sprinkling with cold water, or pouring ether upon the chest. Immersion alternately into hot and cold water is a good method. The asphyxia persisting, some form of artificial respiration may be resorted to, of which Schultze's is most efficient.

This should not be persisted in too long ; if it does not soon give results, Fry recommends the subcutaneous injection of 15 minims of whisky.

If the mild type of asphyxia does not yield to the above treatment or some of its modifications, the more serious form (the pallid) supervenes. The line of treatment should now be modified to meet the changed conditions. The persistence of vigorous efforts to excite artificial respiration will only act injuriously upon the heart and stop its enfeebled action.

An infant born with the pallid form should, contrary to the former advice, be permitted to remain undisturbed in its placental attachment so long as any pulsation of the cord is apparent. It should be sus-

pended by the heels for the twofold purpose of clearing the throat and upper air-passages of mucus and assisting by gravitation to overcome cerebral anæmia.

From this point, as well as from the unrelieved livid form, already considered, the infant must be treated as if it were in a condition of shock, which indeed is the case. Rough measures will only extinguish the spark of life.

The indications are: (1,) To apply external heat. This is best done by immersion in water at a temperature of 100° F.; (2,) Stimulate the respiratory centre, the flagging circulation, the paralysed muscular system, and abolished reflexes. For this purpose Fry strongly recommends hypodermic injections of $\frac{1}{200}$ grain of **Strychnine**; after which artificial respiration may be resorted to, carried on while the child is in the hot bath.

A novel and interesting plan is described by Stringer[4]; the idea suggested itself to him in the following manner:—

A few years ago he was called to a multipara in labour in her fourth or fifth month of pregnancy. In a few hours she was delivered of a fœtus which he took to be about the age indicated. The fœtus, membranes, and placenta were all delivered by the same effort. Nothing unusual having occurred, the fœtus and envelopes were laid aside until his departure, when he had them placed in some cloths and rolled up to carry with him as a specimen; but, it being late in the night, he laid them aside until morning, when, on examining them, to his astonishment he found the fœtal circulation still going on, with a very perceptible pulse at the wrist. Here was a case of fœtal circulation apparently carried on several hours after birth by the aeration of the blood through the medium of the placenta exposed to the atmospheric air.

It occurred to him that this procedure might be utilised in cases of asphyxia in newly-born infants.

A case presented itself in a large and well-developed child, in which the head had been moulded into cylindrical form by a narrow pelvis. The child could not be induced, by the usual method of cold application and rolling, to make any effort at respiration. The circulation was still going on in the funis with some vigour, but the deepening of the dark hue of the surface plainly indicated that, unless oxygenation of the blood could take place, death would soon follow.

Already the pulsation in the cord had become feeble, and was rapidly becoming more so, when he delivered the placenta, rapidly cleansed it of clots, and exposed the maternal surface to the atmospheric air. In a very short time the pulsation was perceptibly

increasing in force ; the livid and deathlike hue was being displaced by one of life and health, and it required but a few moments for the restoration of sensibility, when the process of respiration commenced.

He has tried this plan with marked success in several cases.

The placenta should be spread out with the maternal surface cleansed of all clots and membrane, so that free access of air can be had. If it becomes necessary, on account of numerous clots, to use water to cleanse the maternal surface, it is advisable to have it warm, for it is remarkable how quickly the use of cold water will chill the child.

So long as the circulation keeps on through the cord, there is no need to fear for the life of the child, for it is a continuance of fœtal life *after birth*, and will keep the child alive for an indefinite time. As soon as respiration occurs, which, in some instances, has been delayed as long as twenty-five minutes, the circulation is diverted from the placenta to the lungs, and pulsation in the cord ceases in a few seconds, when the child is to be separated from the placenta, as in ordinary cases.

Tetanus in the New-born is a rare condition. Meerkowski[5] reports a case in which a child seven days old was seized with rigidity of the jaw, followed by complete opisthotonos, with paroxysms every fifteen minutes. The umbilicus was suppurating. Microscopic search and inoculation failed to demonstrate the presence of the tetanus bacillus. Ten c.c. of antitetanic serum was injected twelve hours after the first development of the disease. No amelioration followed the injection, and the child died the following day. The cord lesions were similar to those observed in tetanus.

Facial Paralysis of Central Origin, due to Faulty Application of the Forceps.—A case of this kind was reported by Tissier[6] to the Société d' Obstétrique de Paris. The head had been injured by three unsuccessful applications of the forceps. The child died and at the autopsy it was found that the scalp had been infiltrated and the brain suffused with blood ; but there was no hæmorrhagic focus in the brain itself, nor crushing or depression of the skull. The facial nerve was dissected out, and at no point in its course was there hæmorrhage or serious pressure. On the paralysed side the imprint of the forceps was found, but well above the course of the nerve. He therefore considered that the facial palsy was due to compression of the cranial vault, *i.e.*, to an action upon the motor centres. He thought that this theory explained the comparative rarity of facial paralysis in infants. In the discussion that followed, Budin held that it was not a very rare occurrence, especially before the introduction of axis-traction forceps.

According to him, the mechanism was always the same, the blade of the forceps slipping downward from the head, dragging upon the soft parts, and finally compressing the petrosa, the cutaneous cicatrix being found well below the ear.

The Treatment of Purulent Ophthalmia in the New-born.—Peck[7] considers that **Protargol** and **Argonin** are superior to nitrate of silver.

Argonin should be used of a strength of 3 per cent.; protargol should be employed at first as a 5 to 10 per cent. solution, and later 2 per cent. The drug should be applied at first four to six times a day, and allowed to remain fifteen minutes. Peck gives careful directions as to the details of treatment, which, however, are too long to reproduce here. (See these two drugs under "Protargol," page 41.)

REFERENCES.—[1] "Centralb. f. Gyn," 1898, No. 47; [2] "Wien. klin. Woch.," 1898, No. 11; [3] "Amer. Journ. of Obst." April, 1898; [4] "Texas Courier Record of Med.," June, 1898; [5] "La Presse méd.," Jan. 14, 1899; [6] "Ann. de méd. et de chir. infantiles," Sept. 15, 1898; [7] "Med. News," Jan. 21, 1899.

POST-PARTUM HÆMORRHAGE.

A good summary of this subject is given by Dr. Ch. Maygrier.[1]

Of *ætiology* there is little new to say. He does not, however, mention the administration of an anæsthetic as predisposing to post-partum hæmorrhage—a view that is held by some. Thus, according to Hennessey,[2] etherisation of the patient seems to act as a cause, whether because of the anæsthetic or because it is most often used in abnormal or instrumental labours the writer does not know, but certainly he has seen severe hæmorrhage following its use in an undue proportion of cases.

Classification.—Maygrier describes three forms: (1,) The external; (2,) The internal; and (3,) The mixed.

(1,) When the loss is purely *external*, it comes away in gushes, as if, to use an old comparison, a water-cock had been turned on; and if interference is not energetic and prompt, the death of the patient will soon supervene. In other cases the loss is apparently small, being rather an oozing than a distinct flow of blood; but it is continuous and persistent, and in this persistence lies its gravity.

(2,) When hæmorrhage is purely *internal*, that is to say, when it is entirely within the uterus, the latter becomes distended more or less, according to the severity of the loss; the diagnosis is then somewhat more difficult. On abdominal palpation, however, the uterus will be found soft and large, with ill defined outline, and the patient will present general symptoms of hæmorrhage—progressive weakness, blanching of skin and mucous membranes, small and rapid pulse,

restlessness, sighing and yawning, giddiness, sickness, and fainting attacks. These symptoms should at once put one on the track of the diagnosis, as, if they are misunderstood, the death of the patient is likely to take place.

(3.) The *mixed variety* of post-partum hæmorrhage, where the loss is taking place both externally and within the uterus, is the one most frequently observed. The blood which remains in the uterus coagulates there, and the presence of clots tends to keep the organ in a condition of inertia ; hence the importance of clearing such clots away.

Symptoms.—These need not be recapitulated ; but a premonitory symptom mentioned by Hennessey is worth bearing in mind, as its presence marks the probability of serious hæmorrhage either before or after the expulsion of the placenta, and that is a marked irregularity in the rhythm or force of the uterine contractions. Hennessey believes the irregularity of contractions to be due to partial and often very slight separation of the placenta, as he has observed in some of these cases a firm and adherent clot of blood on the margin of the placenta. In these cases the loss of blood is greatest before the expulsion of the placenta, as a rule, and the treatment should be prompt, and if necessary vigorous, to induce its removal.

Treatment.—This is divided into (1,) Preventive ; (2,) Curative ; (3,) The treatment of the anæmia following the hæmorrhage.

(1,) *Preventive treatment* may be dismissed quickly ; briefly it consists in taking care that the uterus is emptied neither too rapidly nor too slowly. In patients suffering from albuminuria, and in feeble women, the labour must be carefully watched, and at its termination the retraction of the uterus must be brought about by massage, rubbing, hot injections, administration of ergotine, etc.

(2,) *Curative treatment* resolves itself into that of cases where hæmorrhage is taking place before, and of those where it is consecutive to, the expulsion of the placenta.

In the former group of cases, if the loss is slight, a **Hot Injection** either into the vagina or even into the uterus, where it favours the expulsion of the placenta, will be sufficient to stop it. If the flow is more abundant, there exists only one efficacious treatment—**Artificial Delivery** of the placenta. To do this the hand is introduced into the cavity of the uterus, the body of which is fixed by the other hand, and the placenta and membranes extracted after first freeing them if necessary. As soon as this has been done, hot injections into the cavity of the uterus must be given.

In cases where hæmorrhage is taking place after the placenta has been expelled, there are many lines of treatment recommended : but

Maygrier insists that the sole method of real efficacy consists in bringing about uterine contractions by acting directly on its interior, and the best and surest way of doing this is by the introduction of the hand. The first and prime necessity is to **Clear the Uterus of Clots of Blood,** so that it can close in on itself. Hennessey believes that the importance of very small clots in keeping up hæmorrhage is often overlooked.

Sometimes the uterus is flaccid and does not contract firmly, and in such cases the clots may be large and soft. More often, however, there seems to be moderately or even decidedly firm contraction. The organ is firm and small, and may be grasped in the hand, while at the same time the blood pours from the vagina. If now the uterus be firmly held in one hand and the other passed into the vagina (this is easily and quickly done after the passage of the child), the index and middle fingers enter the uterus, which at the same time is steadily crowded down by pressure on the fundus. The fingers then discover, not clots of any size, but a velvety feeling, as they sweep around the cavity. Now if a vigorous scraping by the ends of the fingers, not the nails, includes every portion of the under surface of the uterus, and particularly the higher part of the fundus, where at this time the cavity is small and wedge-shaped, the velvety feeling will disappear, and the firm, muscular wall of this organ will be distinguished.

If the hand is now withdrawn, a few small, firm shreds of blood-clot will probably be brought out on the fingers. They may not in bulk be much larger than a white bean, and would easily escape notice unless looked for. Thus far the writer has yet to see a case in which the bleeding was not instantly checked, and it did not return after this treatment. If owing to a morbid blood state hæmorrhage should still continue, he believes that a piece of gauze saturated with a styptic solution (vinegar being probably the best) passed into the uterus and left there for an hour would be the most promising treatment.

Hot Intra-Uterine Injections are good, but in the presence of clots they lose a good deal of their value. If hæmorrhage persists after the clearing out of the uterus with the fingers, Maygrier recommends packing first the uterus and then the vagina with long strips of iodoform gauze.

(3,) *Treatment of Anæmia subsequent to Hæmorrhage.*—In the first place, the patient must on no account be moved: any change in position may cause syncope. She must, therefore, rest on her back, with her head low, and, if possible, her pelvis elevated. She must be kept warm with hot blankets and hot water-bottles.

Alcohol in some form or other should be freely given, and injections

of ether and caffeine should also be used. It is often useful, as recommended by Winckel, to compress the two lower or all four extremities with elastic bandages, so as to drive the blood towards the nervous centres.

But in the severest cases these means will be inadequate, and we must have recourse to transfusion of normal salt solution, 0·6 per cent.; one drachm of salt to a pint of water just gives this strength. There are two methods available, the subcutaneous and the intravenous. In most cases the former, which is simple and easy, is sufficient, and gives excellent results. The fluid is rapidly absorbed, and its action is almost immediate. It is in cases where the fluid is but slowly absorbed—when the patient has no power of reaction; in fact, in the very gravest cases, when it is a question of moments—that the intravenous injection is evidently the one to use.

The quantity of fluid at first injected was usually about 700 c.c., but Horrocks,[3] in an interesting work which appeared in 1894, insisted on the importance of injecting considerable quantities if one wished to succeed. He injected 3 litres at a time, and repeated it if necessary.

It is often advantageous, after using the intravenous injection, to continue its effect by subsequent subcutaneous injections.

REFERENCES.—[1] "Revue de technique Médico-chirurgicale," 1899; [2] "Albany Medical Annals," July, 1898; [3] "Obst. Trans.," 1894.

Puerperal Eclampsia.

A good review of the whole question of the treatment of puerperal eclampsia is given by Lewis[1] We need not dwell on the question of prophylaxis, since on this point all writers agree. Whatever divergence of views exists has reference to the steps to be taken when prophylaxis fails.

If, in spite of proper effort and of proper co-operation on the part of the patient, the symptoms should continue to become more grave especially should the daily amount of urine continue to diminish and the total urea to remain low, he thinks the weight of present authoritative opinion would advise induction of labour.

Charpentier and the French as a rule advise waiting for the natural supervention of labour and ending it naturally if possible. They entirely discard forced labour and Cæsarean section in eclampsia, preferring the use of chloral to the point of narcosis. Dührssen and many of the Germans advise immediate and even forcible delivery in eclampsia or when that is imminent, always under deep chloroform anæsthesia. Between these comes the great body of the profession, which adopts a middle course within these wide limits.

The advocates of prompt obstetric interference in cases of the graver uræmic manifestations in pregnancy base their claims upon various considerations. In the first place it is known that in the vast majority of cases the spasms cease or grow less severe as soon as the child is born, therefore the sooner that is brought about the better for the patient.

The chief reason for not inducing labour is that the manipulations to that end will of themselves precipitate convulsions. This is not the case if the patient is under complete narcosis. Therefore, if narcosis be complete and the operation be done quickly, the patient is soon brought out of the condition of intoxication and of spasm and stands a better chance of recovery than if allowed to remain therein while the convulsive phenomena are palliated by cardiac depressants or by prolonged dosing with large amounts of morphine. The great trouble, especially in young primiparæ, who are the most subject to these attacks, is that it is very difficult to artificially empty the uterus with despatch. The earlier the eclamptic seizures begin the harder to induce the labour. The *accouchement forcé* is apt to be dangerous of itself. Dührssen devised an operation to overcome this difficulty. In the primipara, after the head has become engaged in the pelvis toward the last few weeks of pregnancy, the body of the cervix becomes effaced, and though the os may be as tight as a pin-hole, yet the cervix is stretched over the protruding head in a thin layer. The main time in inducing labour is taken up by the dilatation of the os. Dührssen makes incisions laterally, and, if necessary, anteriorly and posteriorly, completely to the vaginal attachment through the cervical tissue, thus entirely and at once obliterating the period of dilatation of the os. Then he turns or applies high forceps and delivers at once.

Venesection continues to occupy a prominent place in the recommendations of different authorities. Thus a French writer[2] holds that in many cases bleeding is the best remedy to which we can resort. As much as 10 to 16 ounces is to be removed.

He advocates the combination of **Subcutaneous Injections of Salt Solution** with venesection. Van Roojen[3] reported a case successfully treated by venesection after delivery. There were convulsions, albuminuria, œdema, and cyanosis. He opened the median cephalic vein and bled to 400 grammes. At once the patient began to improve, and no more fits occurred, although at the end of a month an hysterical attack was noted. An injection of 20 mgr. of hydrochlorate of morphine was given after the bleeding. The improvement in the pulse was very distinct directly the heart had been relieved of a greater amount of blood than it could easily impel.

Lewis discusses the question of venesection in a broad spirit. He says that the fact that, in eclampsia continuing after the labour there seems to be a decided benefit observable from free hæmorrhage points to the rationality of blood-letting at any time when spasms occur. This procedure seems more beneficial in those acute cases accompanied by much œdema, large amount of albumin, sudden onset of the uræmic symptoms, full bounding pulse, and cyanosis. Bleeding seems rational in such an array of conditions if ever, whatever the cause of the convulsions may be, whether uræmia, heat-stroke, epilepsy, or what not. Without doubt it has almost always, under such circumstances, been immediately beneficial in puerperal uræmia, but there is question whether it does not do more ultimate harm than good. The relief may be immediate; but as the volume of blood returns to normal by the imbibition of water from the alimentary canal and the tissues, or from hypodermoclysis, the tension returns, and we are then confronted by the former conditions with the addition of an acute anæmia. According to Leyden's idea, the very lesion in the kidney is anæmic. Therefore, while it may be justifiable in the plethoric to do phlebotomy in order to gain time for the action of eliminative drugs and for obstetric interference, yet the procedure is dangerous and should not be carried to any great length.

The value of **Saline Transfusion** is endorsed by several observers. Neale[4] points out that it dilutes the poison that probably circulates in the blood, it stimulates the heart by increasing the bulk of the blood. Transfusion into the loose cellular tissue under the mammary gland is the preferable method. As a rule, each breast will hold a litre if injected slowly, but the amount should be regulated to suit the case. In many cases one hypodermoclysis will not suffice. A second and a third transfusion on successive occasions, and in smaller amount, will often prevent a further recurrence.

Davis[5] reported a case in which this plan was used in combination with **Veratrum Viride.** With regard to the latter drug, opinions still vary. Coston[6] does not believe that this drug is dangerous, when administered in eclampsia, but claims it is one of the most useful when employed in large doses; the only guide being the pulse, which must be brought down and kept below 60. He has used ʒij in twelve hours and ℥ss in twenty-four, the best method being hypodermically, as these cases usually need prompt and efficient attention. His conclusions are: (1,) That veratrum viride is a perfectly safe remedy; even when used in extra large doses, no danger need be feared, so long as the patient is kept in the recumbent posture; (2,) It is almost a specific when used early in the case for all cases of puerperal eclampsia; (3,) Those

who inveigh against it have either not used it at all or have used it too sparingly ; (4,) Use the pulse as a guide, and give the medicine in 10 or 20-drop doses hypodermically every thirty minutes until the pulse is reduced to 60 per minute, and continue the remedy in smaller doses at longer intervals until coma disappears entirely.

On the other hand, Lewis points out that though many favourable reports of cases have been published, especially in America, no one, as far as he knows, has published a series of cases ; whilst in England good results have not been obtained with veratrum. He adds that many who recommend veratrum advise and use also rapid evacuation of the uterus under chloroform anæsthesia. In an affection where so much depends upon maintaining the force and regularity of the heart, it seems very heroic and dangerous treatment to employ to its toxic action so powerful a cardiac depressant as veratrum, with the aim of controlling the spasms, which are themselves only a symptom of serious poisoning of the blood and of a vicious nerve state kept up by the presence of the contents of the gravid uterus.

If we attempt to crystallise the recommendations that receive the most general support in the treatment of eclampsia we shall get something like the following :—

(1,) Terminate pregnancy or labour, as the case may be, as rapidly as possible, relying freely upon **Chloroform.**

(2,) When the circulation appears impeded, and especially when the patient is plethoric or cyanotic, **Venesection** materially assists.

(3,) Venesection may with advantage be combined with **Saline Injections,** applied subcutaneously or by the intravenous plan ; copious rectal injections also answer well.

(4,) Drugs, such as **Pilocarpine, Veratrum,** and **Nitroglycerin,** must be used with caution, but are permissible and likely to be efficacious when the blood pressure is high and the heart's action is good. They may be combined with the **Hot-pack**, or this may be used in the absence of the drugs.

(5,) **Morphine** is useful as a temporary expedient. Some writers, such as G. Veil, Olshausen, and Löhlein give it a prominent place.

REFERENCES.—[1] "Amer. Journ. of Obst.," August, 1898 ; [2] "Journ. de méd. de Paris," Sept. 21, 1898 ; [3] "Journ. d'accouch. de Liége," May 29, 1898 ; [4] "Maryl. Med. Journ.," Dec., 1898 ; [5] "Amer. Journ. of Obst.," April, 1898 ; [6] "Virginia Med. Semi-monthly," Jan., 1899.

PUERPERAL SEPTICÆMIA.

In view of the recommendation and the practice of some authors to treat acute puerperal septic metritis by hysterectomy, Manseau [1] gives the result of his experience of continued intra-uterine irrigations.

Curetting alone is not sufficient because the uterine cavity is such an excellent culture medium and the toxic material continues to be formed. The indication, therefore, is to keep on removing this toxic material as it is formed. **Continued Irrigation** completes the curette's work; and, in Manseau's opinion, cases that it will not cure will not be saved by hysterectomy. Four cases are related in full, and three others referred to, in which this treatment was adopted with complete success. The details of the plan are best indicated by quoting Manseau's observations on one of the cases. He says :—

"Would not this most severe case, full of instruction, be nowadays considered a very strong suggestion in favour of hysterectomy? At first the temperature would not decrease unless the irrigations were continued at the rate of seven gallons of water an hour; afterward the amount had to be increased to twelve. If less water was flowing, if interruption was made, the temperature was sure to rise, sometimes with an astonishing rapidity. It was only on the sixteenth day after the confinement, and after ten days of nearly continued irrigation, that convalescence became permanent. Over two thousand two hundred gallons of boiled water passed through the patient's uterine cavity. As the continuation of antiseptic solution for so long would have been injurious, 1 pint of a solution of $1\frac{1}{2}$ per cent. carbolic acid was used to finish irrigation only. Never was there any factor suggesting decomposition in this case. During the first four or five days secretion was very abundant, and apparently composed of flake-like muco-pus; afterward, of yellowish-white pus. On the tenth day, at the time when absorption was greatest, the patient was seized with a violent cough and pain in the right chest; so intense was it that we could not proceed with the irrigation until $\frac{1}{2}$ a grain of morphine had been given hypodermically, and next day breathing could not be heard, for consolidation was complete. I think this is evidence that the patient could not have stood any further absorption of septic substance."

Under the influence of continuous irrigation the uterus contracts well and fast. The fissure heals rapidly. Irrigation must be kept up until such time as it is certain that there is no more internal suppuration; otherwise the os, now firmly closed, will retain the discharge, and the temperature will rise again one or two degrees.

Cases continue to be recorded in which puerperal septicæmia has been treated successfully with **Anti-streptococcic Serum.** The following, which is one of two cases reported by Pim,[2] may be taken as an example :—

A. J., aged 21, a primipara, eight months pregnant, had lived in a farmhouse, with very insanitary surroundings, during the late hot weather. She had complained of shivering the day before I saw her. The temperature was 102° and the pulse 140. There was pain on pressure over the uterus and severe headache. Next day labour came on; the temperature was 100°. She was delivered eighteen hours later, placenta and membranes coming away naturally and easily. Twelve hours later her temperature was 104·5° and the pulse 150. I injected 20 c.cm. of antistreptococcus serum, and in fifteen minutes her temperature was 102°. During the following two days 10 c.cm. were injected four times, and after each injection there was a fall of temperature as below :—

Injections.	Temperature at Time of Injection.	Temperature 15 Minutes Later.
1st Injection, evening -	104·5°	102·0°
2nd ,, morning -	100·0°	99·0°
3rd ,, evening -	99·5°	98·4°
4th ,, morning -	101·0°	100·0°
5th ,, evening -	100·0°	98·4°

After the fifth injection the temperature remained normal and she made an excellent recovery.

Other observers have been disappointed in their results; and it is probable that one cause of failure is a want of recognition of the fact that the streptococcus is only one of several organisms that may lead to septicæmia. This fact was recognised and acted upon by Haultain.[3]

From the point of view of diagnosis and treatment the observations of Whitridge Williams[4] are of great importance. He made cultures from the uterine cavity in forty cases, and his results were as follows: Streptococci found in eight cases; staphylococci in three cases; colon bacilli in six cases; gonococci in two cases; anaërobic bacteria in four cases; unidentified aërobic bacteria in three cases; bacteria on cover-glass, but cultures sterile, in four cases; diphtheria bacilli in one case; gas bacilli (*Bacillus aërogenes capsulatus*) in one case; typhoid bacilli in one case; cover-glass cultures and blood sterile in eleven cases; cover-glass and cultures sterile, with malarial plasmodia in blood, in one case, making a total of forty-four cases.

He calls especial attention to the value of bacteriological examination in eleven cases in which no pathogenic germs could be found in the uterus. Other causes were present which accounted for the fever. It is especially valuable to be able to exclude dangerous causes in the

presence of puerperal fever. In a case of quartan malarial infection also a positive diagnosis was made by this method.

REFERENCES.—[1] "New York Med. Journ.," July 28, 1898; [2] "Brit. Med. Journ.," Nov. 12, 1898; [3] "Edin. Obst. Trans.," 1898; [4] "Amer Journ. of Obst.," Sept. 1898.

LARYNX (Diseases of). *W. Milligan, M.D.*

Aphonia.—Abrams[1] recommends the following simple plan for the cure of aphonia. With a pencil mark approximately upon either side of the neck, the points in the thyro-hyoid membrane where the internal laryngeal branch of the superior laryngeal nerves pass into the larynx. Freeze these areas by means of a **Chloride of Methyl Spray.** The relief thus produced is usually instantaneous, but may be of only short duration. The author attributes the relief to the fact that freezing acts as a shock, inhibiting the nerve functions for a variable period.

Laryngoscopy in Children.—Petersen,[2] after discussing the difficulties of obtaining a good view of the interior of the larynx in children, advocates a plan first described in 1878 by Rauchfuss, founded upon the theory that parts of the larynx may be seen without a mirror, oftener in children than in adults, by simple depression of the tongue. The author employs Mount Bleyer's spatula, which he has slightly modified, for the purpose of depressing the tongue. The modus is as follows: The child is seated upon an assistant's lap and the arms, legs and head (slightly bent backwards) are fixed. When the mouth is slightly opened the hook of the spatula is gently passed backwards along the tongue to its base. It is then pressed into the fossa epiglottica and the tongue is now drawn gently forward. A laryngeal mirror is then introduced, and when the patient takes an inspiration a good view of the interior of the larynx is usually obtainable.

Laryngeal Tuberculosis.—For the treatment of dysphagia accompanying largngeal tuberculosis Yonge[3] strongly advises the use of **Orthoform** which is strongly anæsthetic, is non-toxic, has lasting effects, and is appreciably antiseptic.

In discussing the pathogenic and earlier clinical evidences of laryngeal tuberculosis Jobson Horne[4] insists upon the importance of the laryngeal ventricles as harbours for tubercle bacilli. He has noted very early changes in the lymphatics of this region where a proliferation of the parenchyma of the acini and efferent ducts and the formation of masses of small round cells distending and choking the ducts and obliterating the glands were present. These changes he has noticed in the lymphatics situated within the walls of the ventri-

cles even where a careful microscopic examination of the entire larynx had failed to show changes in the lymphatics of other parts.

To these changes within the lymphatic walls the giant cell owes its origin.

The parts most richly endowed with lymphatics are the sites elected for subsequent infiltration and ulceration, *e.g.*, the interarytenoid region, the posterior third of the cord, the ventricular bands and the epiglottis, especially the petiolus. In the clinical diagnosis of early laryngeal tuberculosis the following signs and symptoms are important: (1,) Disturbances of sensation—hyperæsthesia, hypoæsthesia, paræsthesia; (2,) Colour changes—anæmia, hyperæmia; (3,) Functional disturbances; (4,) Impaired movements of vocal cords apart from paralysis; (5,) Changes in the contour of the larynx due to slight œdema.

Anæmia of the laryngeal mucosa was noted in 157 out of 359 cases, sometimes general, sometimes in patches; hyperæmia in 117 out of 359 cases.

Disturbances of the vocal function were most frequently met with, especially with the speaking voice in contrast to the singing voice.

Solis Cohen [5] advocates the use of **Formic Aldehyde** in the treatment of tuberculous laryngitis. Weak solutions should be used at first and after previous cocainisation.

Rheumatic Affections of the Throat.—Watson Williams [6] remarks that he has been unable to note any characteristic features in rheumatic affections of the throat. He regards, however, the large majority of cases of acute follicular tonsillitis as of rheumatic origin, and considers that Heryng's so-called benign ulcerations of the pharynx are really rheumatic manifestations. Rheumatic affections of the larynx have a tendency to affect the crico-arytenoid joints, to impair the movements of the vocal cords, and to lead to their more or less complete fixation.

Gouty affections of the throat he considers to be more frequent than rheumatic. They are usually characterised by much pain and by inflammation in patches.

In gouty pharyngitis there is considerable thickening of the tissues with marked irritation. Deposits of urate of soda in the pharynx, in the substance of the true cords, and in the crico-arytenoid joints are very rare.

X-Rays in Laryngeal Surgery.—The value of the use of the X-rays in determining the position of foreign bodies within the larynx becomes more appreciated from day to day. Walter Downie [7] describes two interesting cases of the lodgement of pins within the

laryngeal cavity, so embedded within the soft tissues and so protected by the cartilaginous framework of the larynx as to be invisible when ordinary laryngoscopy was employed.

In Case 1 (*Plate XV*), a pin was seen to be situated at the level of the lower border of the fourth cervical vertebra with its head placed anteriorly and corresponding to the outline of the thyroid cartilage, and with its point embedded in the cartilaginous disc between the fourth and fifth cervical vertebræ. It was successfully removed by means of laryngo-fissure.

In Case 2 a skiagram taken showed the pin to be lying in a line with the posterior border of the right wing of the thyroid cartilage. It was removed by means of forceps introduced *per vias naturales*.

REFERENCES.—[1] "Therap. Gaz.," Nov. 15, 1898; [2] "Journ. of Laryngol.," June, 1898; [3] "Brit. Med. Journ.," Oct. 22, 1898; [4] Ibid., Oct. 22, 1898; [5] "Amer. Med. and Surg. Bull.," July 25, 1898; [6] "Treatment," June 23, 1898; [7] "Brit. Med. Journ.," Oct. 22, 1898.

LEPROSY.

T. Colcott Fox, M.B.

Samgin,[1] in a case of anæsthetic leprosy, found secondary degeneration of the posterior roots, and of the columns of Goll (sensory tract). Degenerated nerve fibres within the ganglia of the posterior roots were apparently continuous with those occurring in the peripheral nerves. He concludes that there was a degeneration of the entire sensory neuron, starting in the peripheral ends of the sensory nerves of the skin. These changes, analogous to those in the peripheral neuritis of alcoholism, suggest the action of a toxic agent probably liberated by the bacilli.

Haslund[2] gives his experiences of treatment by **Mercurial Injections**, and Unna[3] discusses the action of **Caustic Potash Pastes.**

Grunfeld[4] treated two cases of leprosy for six months with **Serum specially prepared by Merck**, and is satisfied with its value.

H. D. Chapin[5] related the results of the treatment of four lepers with **Coley's Fluid** (toxins of erysipelas and bacillus prodigiosus). The initial dose was 1 minim, and this was gradually increased until a dose of 22 minims was reached. The leprosy was never influenced. P. A. Morrow, who reviewed previous experience with erysipelas inoculations and serums, stated that Dyer, of New Orleans, had noted improvement after injections of **Antivenene.**

Tomtoulis Bey[6] has given several hundred subcutaneous injections of **Chaulmoogra Oil** in leprosy in a case which could not continue to take the oil by the mouth on account of the severe gastric disturbance produced. The results were striking and rapid, and the injections gave rise to very little pain, and caused no marked local disturbance.

Foreign Body in Larynx.

Müller,[7] of the Leper Hospital. Pelantsengau, Java, has noted good effects from the external application of **Chinosol**, and its internal administration (15 grains daily) in febrile conditions.

Cultivation of the Leprosy Bacillus.—Carrasquilla[8] reports that he has succeeded in cultivating the lepra bacillus on sloped solidified human blood serum, and on beef bouillon prepared according to the method of Thoinot and Masselin. The bacillus was then cultivated from serum to serum, and from bouillon to bouillon, pure cultures being always obtained. "Two forms were observed: (1,) Long and slender bacilli; (2,) Short, and almost elliptical in shape. The author concludes that the bacillus obtained by him is Hansen's bacillus, because (1,) It resists decolouration by 30 per cent. nitric acid; (2,) There was no reason to believe that any other organism was introduced when the tubes were inoculated; (3,) The filtered fluid from the cultures when injected into horses produced the same reaction as the serum from lepers' blood; (4,) The serum of horses subjected to injections of culture filtrates produces the same reactions in lepers as the serum from horses infected with serum of lepers' blood; (5,) The bacillus stains in the same way as Hansen's bacillus. Carrasquilla hopes to succeed in inoculating animals with the cultured bacillus, and so prove his point."

By making use of a potato-peptone agar nutrient medium, Max Teich[9] also claims to have succeeded in cultivating the leprosy bacillus. The organism isolated, when stained with fuchsine, resisted decolourising with acid and alcohol, and exhibited marked polymorphism, appearing either as a thin rod similar to that found in the tissue, or as a thick, oval bacterium. It seemed to be identical with the organism cultivated by Bordoni-Uffreduzzi, Babès, Spronck, etc.

Differential Staining of the Tubercle, Leprosy, and Smegma Bacilli.—Dr. R. T. Hewlett, in "Treatment," gives the following summary of Marzinowsky's[10] conclusions: By double staining with weak carbol-fuschina and Löffler's methylene blue, a differential staining for the above-named bacilli is possible. The method is to stain in weak carbol-fuchsine (water, 2 parts; carbol-fuchsine, 1 part) for three to eight minutes, to wash carefully in water, and then to stain in Löffler's methylene blue for two to five minutes. The *Bacillus tuberculosis hominis*, both in the sputum and in sections, remains unstained, even after prolonged treatment by this method. The *Bacillus tuberculosis avium*, by treating with the fuchsine solution for six to eight minutes, and, after washing, with the Löffler's blue for five minutes, is stained red, other bacilli and the cell nuclei blue. Somewhat prolonged treatment with alcohol does not remove the

red from the tubercle bacilli. The *Bacillus leprœ* is easily stained by this method (two to three minutes in the fuchsine solution, and one to two minutes in the blue), but alcohol decolourises it somewhat quickly, also treatment with the blue for ten minutes. The *Bacillus smegmæ*, by staining for four to five minutes in the fuchsine and two to three minutes in the blue, is stained red. By prolonged staining in the blue (ten to fifteen minutes) it becomes violet, and finally blue.

REFERENCES.—[1] "Deut. med. Woch.," No. 30, p. 475, 1898 ; [2] "Derm. Zeitschr.," Band vi ; [3] "Monats. f. prakt. Derm.," July, 1898 ; [4] "Derm. Zeitschr.," p. 358, 1898 ; [5] "New York Acad. of Med.," Dec. 20, 1898 ; [6] "La méd. moderne," July 19, 1899, p. 431 ; [7] quoted by "The Therapist," 1899 ; [8] "Reprint of communication to Nat. Acad. of Med. of Bogotà, 1899, quoted by "Brit. Med. Journ." ; [9] "Cent. f. Bak.," xxv, p. 756 ; [10] Ibid., xxv, 1899, p. 762.

LEUCORRHŒA.

Synopsis.—(Vol. 1898, p. 374). ℞ Tannin, 6 parts; Alcohol, 3 parts; Creasote, 3 parts; Water, 24 parts. M. Tablespoonful to a quart of warm water, which may be injected three times a day.

LICHEN PLANUS.

T. Colcott Fox, M.B.

Schamberg [1] calls attention to the efficacy of mercury administered internally in certain cases of lichen planus—a remedy now used a good deal in England. In one case Fowler's solution was used for some weeks in increasing doses, but without any improvement whatever. The **Biniodide of Mercury** was then prescribed in $\frac{1}{8}$ grain doses, three times daily, and within a week the papules began to undergo involution and the itching at once stopped. Within four weeks the eruption had practically disappeared. The arsenic may possibly have had some influence in this case, but in a second example of acute general lichen planus hypodermic injections of **Bichloride of Mercury** were given at the outset ($\frac{1}{3}$ grain three times a week). After three injections improvement was manifest, and after nine injections the eruption had disappeared, leaving behind a profuse brownish-black pigmentation.

With regard to other treatment, Jonathan Hutchinson [2] published a note of a case which did not yield in a month to arsenic in full doses (Fowler's and Pearson's solutions, 4 minims of each three times a day). **Tartarised Antimony,** $\frac{1}{4}$ grain, and **Nepenthe,** 12 minims, every four hours then seemed to effect a rapid cure. Caution is necessary, however, in forming conclusions, for the reporter has often seen cases apparently resist arsenic treatment and speedily ameliorate on the substitution of some other treatment. Possibly the arsenical treatment in such cases has not been without its effects.

Stobwasser[3] deals with the subject of lichen planus of mucous membranes. This occurrence, first noted in England by E. Wilson, is fully recognised. The author estimates the concomitance at the surprising high figure of two-thirds of the cases. He also asserts that lichen planus may be limited to the mucous membranes. Besides the inner surface of the cheeks, they may occur, he says, on the gums, hard and soft palate, pharynx, larynx, tongue, and even the rectal mucous membrane.

T. A. Fordyce[4] describes *a case of universal lichen planus followed by sudden death*, in a woman of sixty years. At the autopsy acute dilatation of the heart, with brown atrophy of the muscle, and chronic diffuse nephritis, with arteriosclerosis and infarctions were found. In this case it was noted that an acute outbreak of new lesions on the skin was preceded by an elevation of temperature, headache, and general feeling of illness, apparently indicating the presence of some poison in the general circulation—possibly from deficient kidney elimination. This poison seemed to act on the papillary blood-vessels. The papules were composed of a cell exudation in the most superficial layers of the derma leading, in its most active stage, to a degeneration of the inferior layers of rete cells and to the fibrous tissue in the papillary body. Hence the slight atrophy which may follow the involution of papules. The peculiar bluish-red colour of the papule is due, Fordyce thinks, to extravasated red blood corpuscles, and hence the pigmentation commonly resulting.

REFERENCES.—[1] "Journ. Cut. and Gen.-Urin. Dis.," Feb., 1899: [2] "Archives of Surgery," vol. ii, p. 88; [3] "Deut. med. Woch.," Feb. 2. 1899, p. 72; [4] "Journ. Cut. and Gen.-Urin Dis.," Feb., 1899.

LOCOMOTOR ATAXIA. (See also "Tabes Dorsalis.")

Synopsis.—(Vol. 1899, p. 376). For sclerosis, **Iodides**, specially **Tincture of Iodine**, or, if this is not tolerated, **Silver Salts**. **Ergot** in acute or subacute stages. **Antisclerotic Diet** is important. **Electro-Therapeutics** and **Suspension** in chronic stages. For pains, **Opium** and **Antipyrine**, avoiding morphia if possible. For gastric crises, **Cerium Oxalate**, **Chloroform**, **Cold Water**, **Electricity**, **Sedatives** and **Mineral Waters**. For deficient muscular power, injections of **Artificial Serum** and **Glycerophosphates**, also **Tonics** and **Massage**, **Hydrotherapy**, **Electricity** and **Mineral Waters**. For ataxia, **Re-education of Muscles** by movements as in Frankel's method. To combat hysterical symptoms, **Suggestion**; vesico-rectal, ocular, trophic, circulatory and bulbar crises are treated according to special indications. For pains, **Methylene Blue** has been advised. **Spinal Cord Extract** or **Brown-Séquard Fluid** has given good results in severe cases. Erb found **Nitrate of Silver** useful in ¼ gr. doses combined with **Nux Vomica** three times a day; and as a tonic, ℞ Lactate of Iron, grs. xlv to 1; Ext. of Cinchona, grs. lxviii to lxxv; Ext. of Nux Vomica, grs. v to x; Ext. of Gentian, q.s. Make 100 pills, 2 or 3 to be taken after each meal.

LUMBAGO.

Synopsis.—(Vol. 1899, p. 380). **Dry Cupping** is often most valuable. **Blisters, Sinapisms,** or the use of **Heat** locally. Internally, **Alkalies, Aconite** and **Colchicum.** Patient should drink plenty of **Hot Weak Tea.** ℞ Sol. Ac. Boric. Sat., Oj. Sig.—Half-wineglassful every four hours. ℞ Atropine, gr. iv; Oleic Acid, ʒj; Castor Oil, ʒj; Oil of Lavender, ɱv; Rectified Spirit, q.s. ad ʒj. Sig.—For local application. ℞ Ammonii Chloridi, gr. xx; Ammonii Carbonatis, gr. v. At a dose, given in water. ℞ Ammonii Chloridi, ʒiij; Liq. Hydrarg, Perchl., ʒss; Sp. Chlorof., ʒss; Infus. Gent. Comp., ad ʒvi. M. Sig.—ʒss ter in die ex. aq.

LUMBAR SPINAL PUNCTURE. (See "Brain.")

LUPUS ERYTHEMATOSUS. *T. Colcott Fox, M.B.*

Bukovsky[1] gives a general review of the therapeutics which may be usefully compared with those referred to last year.

Hebra[2] has obtained excellent and apparently permanent results by gently moistening the parts, perhaps ten times daily, by means of Brun's wadding wetted with a mixture of equal parts of **Absolute Alcohol, Sulphuric Ether,** and **Peppermint Water.** After dabbing the part the wadding is removed until the mixture has evaporated, and then the dabbing is repeated.

Brocq[3] gives the following formula :—

℞ Acid Salicylici	1 part	Collodii	40 parts.
Acid Pyrogallici	3 parts		

Ehler[4] gave one or two **Robin's Pills** daily at meal time, to two patients. There was a local reaction in the patches reminding one of that after tuberculin injections, followed by desquamation and improvement. The formula of Robin's pills is as follows :—

℞ Hydrarg. Chlorid. Corrosiv.		Micæ Panis	grms. 5
Sodii Chlorid.		Glutenis	grms. 2·5
Vini Thebaici	āā grm. 1	Glycerini	grms. 2·3

M. Ft. pil. 100.

Whitehouse[5] records the cure of a case of lupus erythematosus in a woman, aged fifty-two years, by the *internal administration* of 0·06 gr. of **Iodoform** in pill form with each meal. For about three weeks the lesions showed some signs of aggravation, but then rapidly ameliorated, and a complete cure resulted at the end of three months. The disease was of three years' duration, and was of extensive distribution.

Reichel, at the sixth German Dermatological Congress held at Strasburg, recorded the cure of four cases of lupus erythematosus occurring in otherwise healthy patients by the internal use of **Quinine** in the course of fifteen days to three months. In an anæmic man of

phthisical habit the drug failed. It will be borne in mind that Dr. F. T. Payne has recorded the good effects of large doses of quinine in cases of persistent erythema.

J. J. Pringle exhibited a woman at the London Clinical Society with multiple epithelioma of the scalp, following upon lupus erythematosus. This occurrence is more frequently seen after lupus vulgaris.

Finsen's phototherapy[6] "has in many cases given excellent results —permanent recovery and firm scars. Nevertheless, the effect of the treatment is not nearly so sure as it is in the case of lupus vulgaris."

REFERENCES.—[1] "Wein. med. Woch.," July 29 and Aug. 5, 1899, pp. 1,450 and 1,500; [2] Ibid., 1899, No. 1, p. 13; [3] "Progrès méd.." June 17, 1899; [4] "Derm. Zeits.," Band vi, Heft 2; [5] "New York Med. Journ.," Feb. 4, 1899; [6] "Brit. Med. Journ.," Sept. 30, 1899.

LYMPHADENITIS (Chronic cervical). (See "Tonsils")

LYMPHADENITIS (Tuberculous). *Priestley Leech, M.D., F.R.C.S.*

C. N. Dowd[1] advocates excision of glands affected with tubercle if the enlargement does not yield to removal of the cause and general tonic and hygienic measures. Although it is often stated that general or pulmonary tuberculosis seldom results from tuberculosis of the cervical lymphatic glands, such infection probably occurs in a large proportion of cases. Disease of the upper part of the pharynx (pharyngitis, adenoids, hypertrophied tonsils, chronic nasal catarrh) is the most common cause, as the glands most commonly affected at first are the ones at the upper part near the bifurcation of the carotid. Other causes are carious teeth, vermin in the head, eczema, or any other inflammation about the head. Dowd recommends the following incision as the best one where more than a single gland has to be removed. The incision begins transversely under the border of the lower jaw, and runs backwards as far as the mastoid process, and is then carried downwards along the hair border, the hair having been previously shaved. The skin flap is dissected up, and turned forwards and downwards as far as is needed. This incision exposes the whole of the posterior group of glands, and the anterior chain about two-thirds of its distance towards the clavicle and the submaxillary, and if needed, the submental group. The scar is also well hidden, and is not seen from the front.

Statistics also are in favour of excision. Dowd quotes the following figures from the Tübingen, Strasburg and Berlin clinics, where operation was done. Out of three hundred and nine cases, two hundred and two (65·4 per cent.) were apparently cured; fifty-seven (18·4 per cent.) were living with local or general tuberculosis, and fifty (16·2 per cent.) had died of tuberculosis.

Calot[2] says the following method will be successful in the treatment of cervical adenitis without cicatrices in ninety-nine cases out of a hundred. If after general hygienic treatment and residence at the seaside the glands neither soften nor resolve, he injects into them 30 to 40 drops of a 2 per cent. solution of **Zinc Chloride.** This is repeated three or four times every second day, and almost certainly causes softening. When this is accomplished, and at once, if glands, when first seen are softened if the skin is not affected, Calot drives a fine hypodermic needle into the softened material, withdraws a part of it and injects **Camphorated Naphthol.** He thus avoids operation, except in such cases as exhibit ulcerated, undermined, devitalised skin covering.

REFERENCES.—[1] "Ann. Surg.," May, 1899; [2] "Presse méd.," Oct. 22, 1898 and "Rev. de chir.," No. 11, Supplement.

MALARIA. *James Cantlie, F.R.C.S.*

Staining the Flagella of the Malarial Organism.—Dr. Manson[1] describes a method of staining the flagella of the malarial parasite which is at once convenient and satisfactory. Dr. Manson commences by placing thirty or forty strips (3in. by 1½in.) of thick blotting paper, each having an oblong hole (1in. by ⅝in.) cut lengthwise in its centre; the blotting paper strips are moistened and laid on a sheet of window glass. The finger of the malarial patient is then pricked, after being cleansed in the usual way, and the droplet of blood received on a series of cover-glasses, each cover-glass being rendered moist by being breathed upon once. The blood is spread by a needle, and the cover-glasses, with the blood surface downwards, are placed in the pieces of blotting paper so that the hole in the paper receives within its circumference the area of the blood patch. The cover-glass is pressed down in the blotting paper, but not sufficiently hard to touch the surface of the glass beneath. In about forty minutes the covered glasses are removed and gently dried over a spirit lamp. When quite dried, a few drops of absolute alcohol are poured over the specimens; by this means the specimens are fixed. After five minutes the alcohol is dried off and the films covered with a few drops of weak acetic acid (10 per cent. to 20 per cent.), which is allowed to remain until all the hæmoglobin is dissolved out. The preparations are then washed in water and dried, and then stained with carbolic fuchsine (20 per cent.) The staining fluid is to be dropped in the blood films, which are covered by watch glasses, and allowed to remain for six or eight hours. By this time the flagella will be stained, when the staining fluid is run off, the specimen is washed and dried, and mounted in xylol

balsam. The advantage of this process is that the specimen is fairly transparent.

Examining Malarial Blood.—Dr. Neil MacLeod,[2] of Shanghai, suggests receiving the drop of blood from the finger on strips of a sheet of note-paper cut 1½in. by ½in. The paper strip is drawn rapidly across the blood-drop on the pricked finger, and then across the surface of a slide or cover-glass so that a thin smear of blood is left. In this way a specimen is obtained which can be readily stained, and is sufficiently thin for microscopic purposes. Dr. Manson suggests the use of cigarette- instead of note-paper.

The Treatment of the Malarial Fevers.—Dr. C. J. Manly,[3] of Louisville, Kentucky, recommends that when **Quinine Pills** or capsules are administered they must have been freshly prepared, otherwise the pill or capsule is carried into the intestine where the alkaline juices prevent absorption. Children should have the taste of the drug masked by liquorice or the syrup of **Yerba Santa.** No acid should be added when children are the patients, as the acid intensifies the taste, so that it is impossible to disguise it.

When administered by the rectum, quinine may be given in doses of 10 to 30 grains by either enema or suppository. The enema must have **Diluted Sulphuric Acid** added in the proportion of 1 minim to every grain of the alkaloid. It is well to add the quinine and the dissolving acid to the ordinary **Enema Opii** of the Pharmacopœia, the opium serving to allay the rectal spasm apt to be induced by the quinine and the sulphuric acid.

Hypodermics of quinine are useful in cases of coma, irritable stomach, etc., and the best place to introduce the injection is midway between the great trochanter and the tuberosity of the ischium. The **Hydrochlorate of Quinine,** on account of its solubility, is preferred, but the carbonide hydrochlorate, or the hydrochlorate of quinine and urea, may be used, as the salt dissolves in its own weight of water and is unirritating. When the sulphate is the only drug available, the salt is to be dissolved by adding diluted sulphuric acid drop by drop. Distilled water is then added in sufficient quantity to fill the syringe employed. The injection must be made deeply and not merely subcutaneously; as much as 5 to 10 grains may be given at a time by this method. The subsequent pain may be alleviated by hot applications. **Intravenous Injection** is indicated in desperate cases. Baccelli, who introduced the method, recommends the following preparation :—

℞ Quinine Hydrochlor. grs. xv | Distil. Water ℥ijss
Sodium Chloride grs. xij |

This solution must be boiled and filtered, and then injected into a vein, in the leg by preference.

As a rule, the hypodermic dose should be about one-half that by the mouth, but the rectal dose may be somewhat larger. In the case of children, Rotch recommends $\frac{1}{2}$ grain for children under six months, and at the rate of 1 grain for each year of age over that up to the adult dose.

To counteract cinchonism, $\frac{1}{6}$ grain morphia and $\frac{1}{100}$ grain atropine are useful ; they, at the same time, have a beneficial effect in malarial fevers.

During the height of a malarial paroxysm a hypodermic of **Morphia** or $\frac{1}{3}$ grain **Pilocarpine** mitigates the severity of the symptoms. Quinine should be given only during the intervals in intermittent fever and the remissions of remittent fever.

Dr. M. C. Nanjimda Row[4] condemns giving antipyretics to bring down temperature in malarial fevers, as he has always found that the reduction of the fever by means of an antipyretic prevented the full action of quinine, and also, that recurrence of the attacks is common in cases so treated.

The Type and Symptoms of Malarial Fever met with in Senegal and the West Coast of Africa.—Dr. Marchoux[5] and Captain Duggan,[6] R.A.M.C., mostly concur as to the type and symptoms of fever in West Africa. They are as follows : A feeling of malaise for two or three days, followed by fever of a continued or remittent type with vomiting. Icterus is frequently present, and the patient rapidly becomes weak and often delirious. In three or four days the patient under treatment recovers, but in twelve or fourteen days the fever returns. The same sequence results with a recurrence in twelve to fourteen days. The attacks recur again and again until the malaria becomes chronic.

At Sierra Leone, Captain Duggan, contrary to the experiences recorded by Dr. Marchoux, in Senegal, did not find the season of the year influence the appearance of the parasite ; it was also found alike, both in the wet and dry seasons and, moreover, Capt. Duggan found the blood of malarial patients from the West coast, on arrival in England, exhibited parasites identical in size and form with those examined at Sierra Leone, viz., minute unpigmented forms, slightly pigmented, and crescents. Capt. Duggan is of opinion that the parasite of malaria met with on the West coast of Africa is identical with the summer and autumn parasite of southern Italy. Capt. Duggan recommends 5-grain daily doses of quinine as a prophylactic in malarious districts.

Euchinin in Malaria.—Dr. St. Geo. Gray,[7] of St. Lucia, West Indies, advocates the use of this drug, and sums up his convictions as

follows : (1,) Euchinin is as effective as quinine in malarial fever ; (2,) It causes cinchonism ; (3,) It is tasteless ; (4,) A smaller dose suffices. Dr. Gray considers a preliminary purge an essential adjunct in the treatment of all cases of malaria. The maximum dose he recommends is 15 grains twice daily, but a dose of half the quantity is usually enough.

Ground-water and Malarial Fever.—Capt. Leonard Rogers, I.M.S., in a paper read before the Epidemiological Society on February 18, 1898, drew attention to the marked association of malarial fever outbreaks with a waterlogged soil. In lower Bengal fever was at its lowest when the land was entirely submerged, and reached its maximum during the period of rapid drying of the ground. In Assam there was a form of fever which was communicable from the sick to the healthy, even in localities naturally exempt, when a man had contracted it elsewhere. Dr. Manson, in criticising the paper, denied the identity of coincidence or correspondence, however constant, with true causation, and believed that there existed intermediate causes of which as yet nothing was known. Colonel K. McLeod, Netley, considered stagnation of far more importance than the level of the ground water, and to this was due the alarming increase of fever in the irrigated districts of the North-West districts. Dr. Pringle referred to the disastrous influence on health to the unscientific system of so-called irrigation in the country between the upper Ganges and the Jumna.

Fertilisation of the Malarial Parasite.—Our knowledge of the fertilisation of malarial parasites dates from Dr. W. G. MacCullum's report on the subject at the meeting of the British Association in August, 1897, when this observer recorded his observations on the process of fertilisation in the malarial parasite of birds (Halteridium). At the Johns Hopkins Medical Society meeting, on October 18, 1897, MacCullum made a second report, in which he stated that the phenomena he observed in birds he had found to obtain in the malarial parasites of human blood. These observations establish the following sequelæ of events : Crescents, a few minutes after the blood was drawn, became ovoid, and, after a few minutes, more round and extra-corpuscular. In certain of the spheres, after twenty to twenty-five minutes, flagella appeared, which broke away and approached some one of the other spheres which remained quiet and did not flagellate. One of the free flagella now entered the quiet spheres, the pigment of which became violently agitated. The spheres thus impregnated looked swollen and subsided into a quiet state. We have here direct proof of the existence of a process of fertilisation which has been confirmed by subsequent observation.

Clinical Observations on Malaria and its Treatment.—Dr. Beverly Robinson,[8] New York, discusses in an able paper measures of treating malaria other than by quinine. He refers also to the importance of the clinical features of malarial infection as distinct from, or as aids to diagnosis by, its parasitological features merely. Dr. Robinson states that the non-finding of the plasmodium in the blood may be due to unskilled observation, but he is inclined to believe that it is not always so. Even were such the case, he holds that the clinical features of malarial infection are sufficiently marked to establish a diagnosis.

In regard to drugs which may be used as a substitute for the sulphate of quinine, he speaks highly, from practical experience, of such preparations as **Huxham's Tincture of Bark** and of **Warburg's Tincture.** Huxham's tincture is valuable, Dr. Robinson believes, owing to the presence in the compound of constituents of the bark which are soluble by percolation with alcohol, to the tannin which it contains, and possibly, to virginia snake root. Warburg's tincture seems to owe its efficacy to its cholagogue powers. When quinine given by the mouth causes tinnitus, it may be administered by the rectum with less chance of aural troubles arising ; but a criticism of this recommendation would naturally bring one to the conclusion that the absence of tinnitus in this case is due to non-absorption of the drug.

The compound tincture of **Cinchona** in mild cases of fever is useful ; it may not act so speedily as quinine, but it is often more efficacious, especially when prolonged treatment is required. Instead of the lowering tendency, the cachectic look and the subicteric tint, so apt to occur from a too prolonged administration of quinine, the tincture of bark checks the anæmia, stimulates the appetite, and improves the patient's strength and general condition. In place of the compound tincture, the compound fluid extract of bark may be given ; it is devoid of alcohol and is five times stronger. **Pilocarpine** in the hands of some physicians is employed as a means of aborting the paroxysms of intermittent fever. One-fifth of a grain of the muriate of pilocarpine given hypodermically is a dose few would care to try. As a general rule, **Chloric Ether** or a hypodermic of **Morphia** and **Atropine** serve to give a feeling of comfort and well-being to the patient when administered in the early stage of a paroxysm. In recurrent malarial attacks Dr. Robinson finds excellent results from one or other of the following prescriptions : (1,) Reduced iron, arsenious acid and sulphate of quinine ; or (2,) Citrate of iron and quinine, arsenious acid, extract of nux vomica, and extract of henbane.

Dr. W. Forbes Leslie[9] contends that well nigh every district has a fever differing clinically; it does not seem likely that they can be caused by one species or one group of allied species of organisms. Dr. Leslie does not believe that quinine is a specific for malarial poison, and is induced to ascribe malaria to defective functional activity of the liver and intestines, and recommends **Calomel** as a purgative and hepatic stimulant. When quinine is administered it should be after calomel has acted freely.

Professor Koch[10] states that quinine will overcome the parasite of malaria when given at the period preceding sporulation. When the fever has ceased, 15 grains of quinine should be administered every five days for two months. Professor Koch is of opinion that persons who have once caught malaria and have recovered spontaneously without quinine possess a certain degree of immunity. The natives of the West Coast of Africa, who never catch malaria, owe their immunity to the circumstances that their ancestors have passed through the disease.

E. T. Simpson, civil surgeon, Oudh, India, prescribes the following mixture in all cases of malaria in which diarrhœa was not present: –

℞	Mag. Sulph.	ʒj	Quinine Sulphate	grs. xv
	Sol. Ammon. Acetat.	ʒj	Camphor Water	ad ʒviij

Sig.—ʒj every four hours.

He claims that 90 per cent. of malarial cases yield to this treatment. In chronic cases he prescribes:—

℞	Mag. Sulph.	ʒij	Acid. Sulph. Dil.	ʒij
	Quin. Sulph.	grs. xij	Tinct. Zingib.	ʒiij
	Ferri Sulph.	grs. vj	Aq. Camph.	ad ʒxij

Sig.—ʒj twice or thrice daily.

Malaria in Rhodesia.—Dr. Dunley-Owen[11] states that in Rhodesia malaria is very prevalent, and finds that the poison seems most virulent one hour before and one hour after sunrise. He states that he has made cultivations of the bacillus obtained at this time of day from the grass and soil, but only to the height of 4 feet above the level of the soil. Dr. Dunley-Owen considers that "horse-sickness" is of a malarial nature. He arrives at this conclusion from the fact that horses stabled at night and not let out to grass before 9 or 10 a.m. do not get sick, whereas horses turned out before or at sunrise contract "horse-sickness" pretty certainly.

Dr. Manson[12] draws attention to a minute black dot met with in the lymphocytes of the blood of healthy people. Occasionally there are two such black dots, very rarely three; they lie in the cytoplasm and, usually, close to the nucleus. In accurate focussing the dots are

as black as malarial melanin and closely resemble it. When the lens is raised the intense blackness disappears and a brightly refulgent speck is seen. Dr. Manson contends that this is a physiological and not a pathological feature.

Malarial Affections of the Eye.—Surgeon-Major Jarr[13] classifies these as follows: (1,) Neuritis; (2,) Retinal hæmorrhages; (3,) Retino-choroiditis; (4,) Effusions into the vitreous. As regards malarial neuritis Powell has shown that the changes in the disc and retina are due primarily to melanæmia with increased vascularisation. Retinal hæmorrhages in malaria are either minute peripheral or large peri-papillary and macular. Retino-choroiditis occurs in about 20 per cent. of acute intermittents and is attended by supra-orbital pains, tenderness on pressing the eyeballs, photopsia and photophobia. Examination discloses a hyperæmia of the fundus, a red swollen papilla surrounded by a grey veil and general haziness of the retina.

Incubation Period of Malaria.—D. C. Rees,[14] M.R.C.S., observed that in the case of a crew which left Calcutta, proceeding to London, malarial fever developed in a number of the crew on the fourteenth day after leaving Calcutta. Eight to twelve days is the usual period of incubation, as ascertained experimentally. Mr. Rees also observed that some of the crew became infected with the benign tertian parasite, whilst others contracted the æstivo-autumnal or crescent-forming parasite. It was also noticed that the period of incubation for both varieties of the parasite was the same.

Epidemic Cerebro-spinal Fever in India.—Surg.-Capt. Buchanan,[15] I.M.S., after a study of cerebro-spinal fever in India, comes to the conclusion that the disease never becomes epidemic in the sense that cholera or plague becomes epidemic. A few isolated cases or a series of two or three cases at a time in any particular place is the usual history. Connection can seldom be traced from one case to another, and there is no evidence that it is infectious. In Alipur jail, in India, cases occurred at intervals during ten years. The disease has been chiefly noted in large jails and on emigrant ships carrying coolies.

Treatment of Malarial Fever in Cuba.—Dr. Thomson,[16] in forty-seven cases of Cuban malarial fever gave: Quinine, grs. xv; powdered ginger, grs. xv; and half an ounce of paregoric twice a day with excellent results.

Ergot in Chronic Malaria.—Dr. Jacobi[17] advocates the use of ergot when enlargement of the spleen is not of too long standing, and in which quinine fails to do good. Dr. Jacobi gives ergot in the form of the fluid extract (Squibb's), one teaspoonful in whiskey and water four times a day.

Nuclein in Malaria.—In the Cincinnati "Lancet-Clinic," April 30, 1898, nuclein is advocated as a treatment in chronic malaria. Nuclein, prepared from animal tissues, the spleen, testes, thyroid, etc., is administered in tablets or hypodermically. Each tablet corresponds to 1 minim of the nuclein, and one may be given every two or three hours in cases of chronic malaria proving intractable to quinine.

Hæmaturia.—Dr. Ballard,[18] of Natchez, Miss., states that in the hæmorrhagic forms of malarial fever quinine has been given up by the "swamp doctors" in Mississippi state. The protracted use of quinine seems to be a provocative of hæmaturia in malaria. In intermittent fever Dr. Ballard gives a mercurial purge and then quinine, but in hæmaturia he uses **Ergot** in ½-drachm doses every three or four hours, and **Strychnine** hypodermically. Turpentine in 10-drop doses every three hours seems efficacious in clearing up the urine.

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MALARIA IN INFANTS AND CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. F. M. Crandall[1] gives the most marked peculiarities of malarial fever under five years as follows: (1,) Mildness or absence of the first and third stages; (2,) Irregularity of the hour of paroxysms; (3,) Constant enlargement of the spleen; (4,) Tendency to nervous disturbances. The diseases which are most commonly mistaken for malaria are chronic intestinal indigestion, tuberculosis, septic infection, and, in older children, typhoid fever. Demonstration of the plasmodium renders the diagnosis at once certain. As regards treatment, he advises free **Catharsis** at the outset by means of small doses of calomel frequently repeated. Young children are prone to vomit **Quinine,** even when it is swallowed without objection. It must be administered to them in solution. The taste is well covered by syrup of yerba santa. If it is impossible to give quinine by the mouth, it may be administered by suppository or rectal injection. Quinine is most effective if administered about three hours before the paroxysm. In chronic forms a small amount of quinine should be given daily, but the chief reliance is to be placed upon **Arsenic.**

REFERENCE.—[1] "Internat. Clin.," vol. ii, 1898.

MALARIAL FEVER. *Major Ronald Ross, D.P.H., M.R.C.S.*

During the last two years an important advance has been made in our knowledge regarding malaria. The life-history of the specific parasites outside the human body has been determined—certainly in part, probably entirely; the mode of infection—certainly one mode of infection, probably the only mode—has been ascertained: and more precise methods of prevention than those now in use have been suggested. I propose to deal with the subject here in a somewhat historical and critical manner, because I think that such will prove more interesting and useful to the medical reader than a mere recital of the bare facts. I should add that the new nomenclature employed has been adopted by me in consultation with Professor Herdman, F.R.S.

Parasitic Nature of Malarial Fever.—Medical men in the tropics have not even yet employed Laveran's discovery sufficiently for diagnosis and treatment. This is due, I think, to the fact that many practitioners have not felt quite convinced that the bodies described by Laveran are really the cause of the disease. Men not very conversant with zoology and cytology have been inclined to hold: (*a*,) That the so-called parasites are really altered blood corpuscles; and (*b*,) That even if they are parasites, their connection with the disease has not been established. As a matter of fact, this position has been quite untenable for many years. The parasitic nature of these bodies was self-evident from the first on account of their abnormality, structure, movement, growth and sporulation, and because of their relationship to a series of obviously parasitic animals in birds and reptiles; while their connection with malarial fever was demonstrated, (*a*,) By the fact that they contain *melanin*, which is the typical pathological product of the malady; and (*b*,) Because the accessions of fever are coincident with the sporulation of the organisms. Hence, as it was impossible to conceive that the disease generates the parasites, we were forced at once to admit that the parasites generate the disease. Now, however, the recent investigations, which I shall describe, have set the question completely at rest; the parasites have been cultivated outside the body, and numerous healthy men and birds have been experimentally infected in a manner which removes all possibility of doubt. Let us consider the subject from the beginning.

Life-History of the Parasites within the Intermediary Hosts.—Laveran discovered the parasites of malaria in 1880; and Danilewsky the closely allied parasites of birds six or seven years later. In 1885 Golgi ascertained that these parasites multiply by ordinary asexual spore-formation; that the host's temperature rises with the liberation

of spores in a given generation of parasites ; and, later, that there are at least three varieties of the human parasites, namely, those connected with the quartan, tertian, and irregular or aestivo-autumnal fevers respectively. These great discoveries were next consolidated and perfected by numerous writers in many parts of the world, until, towards the year 1894, we had acquired a very thorough knowledge of this stage of the parasites and of the pathological results produced by them.

As regards the life-history of the parasites, this knowledge was briefly as follows : The parasites constitute a zoological group of the Protozoa (or unicellular animals), which may be called the Hæmamœbidæ, and which is now known to contain about ten species, namely, three of men, two of birds, two of bats (Dionisi), one of monkeys (Koch), and possibly two of frogs. They are all essentially parasites of the red blood corpuscle, and are all extremely like each other. The youngest forms are practically minute *amœbæ* living within the corpuscle, and should be called *amœbulæ* or *myxopods*. As they become larger they generally acquire certain black granules, as a result of their assimilation of the hæmoglobin of the corpuscles within which they live. These black granules constitute the *melanin*, or *malarial pigment*, which I have already referred to as being the typical pathological product of malarial fever. At the same time, as the amœbulæ grow older, they tend to lose their amœboid movements and to fill up the containing cell. After a period of from one to several days (according to the species), they reach maturity in two ways. Some become *sporocytes*, and others become *gametocytes*.

The sporocytes give rise asexually (that is, by division) to a variable number of *spores*. When perfectly mature the spores escape from the containing envelope of the corpuscle and are scattered in the blood serum, where they presently attach themselves to fresh corpuscles and develop into a series of fresh amœbulæ—thus continuing the life of the organisms indefinitely within the host.

On the other hand the gametocytes do not give rise to spores, and indeed appear to have no function at all within the hosts. In some species of the parasites, such as those of quartan and tertian fever in men, they are shaped roughly like the sporocytes before the spores are formed ; but in another species, namely, that of the irregular fevers, they possess a peculiar crescentic shape, owing to which they are technically called *crescents*. As I have said, they undergo no further development within the hosts—they form no spores and produce no fever ; but a few minutes after the blood is drawn from the host, as, for instance, by pricking the skin, many of them exhibit a curious

change. They burst the shell of the enclosing corpuscle, swell up a little, and then often emit a number of long *motile filaments* which can sometimes be seen to escape entirely from the parent parasite and, indeed, to dart away in the surrounding serum. This process can be most easily watched in the crescents, which, a few minutes after the specimen of fresh blood has been made, first lose their crescentic shape, becoming successively straight, then oval, and then spherical, and, finally, emit the motile filaments—all within about fifteen minutes, under the eye of the spectator. The filaments are technically called *flagella*—an erroneous term which must now be abandoned. They can sometimes be watched wriggling about freely in the serum for over an hour. It is most important to note that these filaments proceed only from the gametocytes, and then only some time *after* the the blood has been drawn.

Up to the end of the period inaugurated by Laveran and Golgi, that is, up to the year 1894, although many observers had recognised the existence of these gametocytes and had watched the escape of the motile filaments from them, we were quite ignorant regarding their real nature and function—we could account neither for the gametocytes themselves, nor for the motile filaments. Laveran and Danilewsky thought that these bodies represent the highest development of the parasites, but gave no reasons for this view. Mannaberg held that the filaments are meant to lead a saprophytic existence outside the body, but did not indicate how he supposed they could escape from the body. Bignami seems to have considered that the gametocytes are meant to continue the species outside the host in some way or other ; but his utterances are confused, and he did not show how these bodies were to perform this function. At the same time he accepted the hypothesis promulgated by Antolisei, Grassi and many others, that the motile filaments which proceed from the gametocytes are merely the result of the death and disintegration of the latter after they are taken from the host.

In the year 1894, however, a new era in the study of malaria was ushered in by Manson's great induction regarding these bodies—an induction which not only gave what was nearly the right explanation of their function, but also indicated at the same time how the difficult problem of the life-history of the Hæmamœbidæ *outside* the hosts was to be solved.

Life-History of the Parasites within the Definitive Hosts.—It is now clear that up to this date all we had succeeded in doing was to ascertain the history of the parasites only in what we now know to be their *intermediary* hosts—men, birds, bats, etc. It was obvious that there

must also be a stage of the life-history outside these hosts, but where and how this stage is passed we could by no means discover. We conjectured, for various reasons, that the parasites must live in the air, water, or soil of malarious places; but all attempts to find them in these elements had failed, and, as a matter of fact, our conjectures were incorrect.

For a long time, however, a certain nebulous hypothesis had been gaining ground, to the effect that the disease is caused by the bites of *mosquitoes*—the name given to *gnats* in the tropics. In 1883, King produced an excellent summary of the arguments in favour of this view, showing that malaria exists in localities, climates and seasons in which gnats most abound, and so on. To my mind these arguments, though they are very interesting, afford no more than a weak probability in favour of the gnat theory.

Next year Laveran briefly enunciated the same hypothesis, but added a much more powerful argument than those given by King, in noting a bionomical parallel between his parasites and *Filaria Bancrofti*, which had been shown by Manson to develop in gnats. Since then the theory has been adopted by many others, notably Koch, Bignami, and Mendini; and a further parallel between the Hæmamœbidæ and the parasite of Texas cattle-fever, which is carried by a tick, has been adduced in its favour.

But it is certainly to Manson that we owe the real mosquito theory of malaria. His was not the weak hypothesis framed on doubtful coincidences and analogies which had hitherto held the field, but a true scientific induction based on his sagacious interpretation of certain phenomena in the life-history of the parasite of malaria itself. Fixing his attention on the gametocytes and on the fact that they emit the motile filaments only after the blood is taken from the host, he concluded that the emission of the filaments is a natural, organic process in the history of the parasite, meant for its further development within some suctorial insect. The sporocytes, he said, continue the life of the parasites within the first host (men, birds, and so on); the gametocytes continue it within a second host, the suctorial insect. He thought that the motile filaments are merely flagellated spores which are produced from the gametocytes just as the ordinary spores are produced from the sporocytes, the former attacking and living in the tissue-cells of the second host just as the latter attack and live in the fresh blood-corpuscles of the first host. It was evident at once that the suctorial insect could be no other than the mosquito.

Thus Manson at once combined and perfected the previous hypotheses of King, Laveran, and Mannaberg. He explained the function

of the gametocytes, and, in doing so, showed how the further life-history of the parasites could be followed out by the experimental method. In one respect, indeed, he has proved to have been wrong —the filaments are not of the nature of spores at all ; but this does not impair the value of his induction, because, nevertheless, they and the gametocytes possess the function of continuing the species in mosquitoes, as he said they did. He also pushed his ideas somewhat beyond the solid ground of his induction ; though he admitted their conjectural nature beyond this point. In these ideas again he has not proved to be right. But nevertheless we owe the key of the position to him : we owe to him the fundamental idea which actually led to the solution of the problem—the idea that the gametocytes and motile filaments *must* be meant for the development of the parasite in the mosquito.

Convinced by his arguments, I commenced the experimental study of the subject in Secunderabad, India, in May, 1895. Hundreds of mosquitoes were fed on patients whose blood contained the crescentic gametocytes, and were examined a few minutes afterwards. While it was indeed observed that a larger proportion of crescents yield motile filaments in the insect's stomach than *in vitro*, I failed to find any further development in these filaments. I attributed this failure to the extreme delicacy of these bodies, and consequently determined to vary the procedure. Insects fed as before, instead of being examined almost at once for the filaments, were kept alive for some days and then searched for the parasites which, by hypothesis, the filaments should have developed into in the meanwhile. The difficulty here was that we possessed no indication as to the form and appearance which these parasites would adopt, while we did not even know which species of gnats would be able to accommodate them (and we had no right to assume that all species would have this power). Many hundred individuals of the commoner species of gnats (genus, *Culex*) were searched during more than two years in vain. At last, in August and September, 1897, while working with two new species (of genus *Anopheles*) bred from the larva, and fed on patients containing crescents, I found certain peculiar spheroidal cells on the wall of the stomach, which at once roused my suspicions because I had never seen them before and because they contained the typical pigment of the parasites of malaria. In fact, I was convinced that these cells constituted the long-sought mosquito stage of the parasites.

In the meantime the true nature of the motile filaments, popularly called "flagella," had been determined by the beautiful discovery of MacCullum, in America (1897). They are not meant to pass directly

into the tissues of the gnat, as Manson supposed, but are of the nature of spermatozoa. Just as the sporocytes are asexual elements, so the gametocytes are sexual elements, male and female. The female gametocyte contains, or rather consists of, a single ovum or *macrogamete*. The male gametocyte contains a number of spermatozoa or *microgametes*. Shortly after the gametocytes are drawn from the circulation of the first host, as for instance into a specimen or into the stomach of a suctorial insect, the act of fertilisation takes place. That is, the microgametes, which are of course the same as the motile filaments, escape from the male gametocyte and approach a female gametocyte. One microgamete now enters the female gametocyte or macrogamete, and fertilises it—the phenomenon having been actually witnessed by MacCullum, Koch, and others. The fertilised macrogamete is then called a *zygote* and is capable of continuing its life in a suitable medium. What that medium is MacCullum did not recognise; but Manson immediately grasped the truth. It is the zygote, or fertilised macrogamete, which, he said, is capable of living in the tissues of the gnat; and not, as he had supposed, the motile filaments. In short, he saw at once that the pigmented cells which I had just found in the *Anopheles* are the very zygotes in question.

The terms *microgamete* and *macrogamete* are the expressions used in the study of the lower plants and animals partly in the place of the well-known words, "spermatozoid," "antherozoid," "ovum," and "ovule." We are already quite familiar with them in botany; and during the last few years Metchnikoff, Simond, Siedlecki, and Schaudinn have shown that a similar sexual apparatus exists in some of the Coccidiidæ—another group of the Protozoa.

It remained only to follow out the future life of the zygotes. I had been suddenly interrupted just after I had first succeeded in finding the zygotes in *Anopheles*, in 1897; but early in 1898 I was placed on special duty in Calcutta to continue the investigation. Owing to the timidity of the people there in respect to plague inoculations, I found myself unable to work at the time with human malaria, and therefore employed the almost identical parasites of birds. It was soon ascertained that the zygotes of one of the avian species, called *Hæmamœba relicta* or *Proteosoma Grassii*, can live in a common kind of mosquito, which is either *Culex fipiens*, or, according to Giles, *Culex fatigans;* and as both the infected birds and the gnats were very plentiful, the researches presented no further serious difficulty.

It was found that the zygotes of *H. relicta*, like those derived from crescents, attach themselves to the outer coat of the insect's stomach, where they first appear as small oval or round cells from 8 to 12μ in

diameter. Each little cell contains about twelve to twenty granules of the typical melanin. Fixed in this position the zygotes grow rapidly, without movement, change of position or of shape, and protrude into the insect's body-cavity (which contains its blood). As growth proceeds the capsule becomes marked, and the substance of the cell divides into about a dozen *meres*, each mere containing some of the bioplasm and some of the chromatin of the zygote. In from one to three weeks, according to the external temperature, the zygote reaches maturity, each mere having produced a large number of delicate thread-like *blasts*, from 12 to 16μ in length, attached by their ends to a spherical blastophore, which finally vanishes. The capsule of the zygote now ruptures and scatters the blasts into the insect's blood, by which they are carried into all parts of its tissues. Many of them now find their way into the cells of the gnat's *salivary gland*, in which they lie ensconced, sometimes in large numbers.

The salivary gland of the gnat consists of six lobes, the ducts of which unite in a common vessel which passes along the middle stylet, or "lancet," of the proboscis and opens at its extremity. Hence the secretion of the gland must be poured into the wound made by the insect's bite, and is probably the cause of the irritation which the bite causes. Hence, also, the blasts must pass with this secretion into the wound. The inference is obvious—the blasts enter the circulation of a fresh intermediary host, in which they set up a malarial infection, becoming the amœbulæ with which the life-history of the parasite commenced. In other words, *malarial infection is caused by the bites of infected gnats.*

To establish this important point beyond all possibility of doubt, I made the following experiments (June and July, 1898). A number of *Culex* were fed on sparrows infected with *Hæmamœba relicta* (*Proteosoma Grassii*). The insects were kept alive for over a week until many of them showed the blasts in their salivary glands. The rest (many of which must of course have been similarly infected) were now fed again on healthy sparrows ; another batch of healthy sparrows being meanwhile preserved from the bites of mosquitoes for comparison. The result was decisive. Out of twenty-eight healthy sparrows which had been subjected to this experiment, twenty-two became infected in from five to eight days afterwards ; while the control birds remained perfectly healthy. A crow, and some weaver birds, were also infected in the same manner. Moreover, the gradual onset of the infection after the period of incubation, and the increase of the number of the parasites in the blood as the disease advanced, were carefully watched in all the birds ; while after their death, typical pigment was found in their organs.

It should be repeated that all the experiments, from those connected with the infection of the gnats from the birds up to those connected with the infection of the birds from the gnats, were guarded by the usual and necessary control experiments, so that error in regard to the main conclusions was rendered impossible.

It was seen, then, that two species of the Hæmamœbidæ can transfer themselves from men and birds to the appropriate species of gnats, in which they can undergo further growth; it was also proved that one of these species can be communicated again from the gnat to the healthy bird by way of the salivary gland of the former. Moreover, since all the species of Hæmamœbidæ are zoologically closely similar to each other, it was certain that all would possess a similar life-history. In other words, the general life-history of the group, at least as regards one complete cycle, was now ascertained.

I should add, however, that in many of the mature zygotes I had found certain large resistant bodies which I provisionally called "black spores," and which I thought might be concerned in the formation of a second cycle passing through the *larva* of the gnat. But latterly I have found in many mosquitoes very similar black bodies, which appear to be segments of a parasitic fungus. In recent observations at Sierra Leone such bodies were found mixed with spores, or colourless segments, within the sheath of muscular fibres of the insect. Hence I now have grave doubts respecting the nature of these bodies, and indeed of the existence of any second cycle at all.

My first observations regarding the presence of "pigmented cells" (zygotes), derived from crescents in "dappled-winged mosquitoes" (*Anopheles*), were published in the "British Medical Journal," December 18th, 1897, and February 26th, 1898. Further results regarding *H. relicta* were announced by Manson in the same journal, June 18th, 1898; while the whole subject, including the infection of healthy birds, was expounded by him before the British Medical Association, in August, 1898. Previous to that an illustrated report describing the zygotes and the *technique* employed had been submitted by me to the government of India; and copies of this report were now circulated in Europe and America. In October a preliminary report on the infection of healthy birds was also submitted. In January, 1899, my results were confirmed by Dr. Daniels, of the Malaria Commission of the Royal Society and Colonial Office, who had been sent to Calcutta to work with me; and at the same time they received the honour of acceptation from Laveran, Koch and Metchnikoff.

To extend these investigations fully to other species of the Hæmamœbidæ was now a task of no difficulty whatever, since we were

already in possession of the necessary *technique*, the appearance and history of the zygotes and the blasts, and the fact that only certain species of gnats are amenable to each species of parasite. Indeed, I had already partially followed the zygotes of the æstivo-autumnal parasites in two species of "dappled-winged gnats," and had consequently fastened suspicion on this kind of mosquito. I was myself unable to continue this work properly owing to a second interruption of my labours; but, after the publication of my results, Grassi, Bignami, and Bastianelli took up the investigation in Italy with great success; while at the same time Koch added his valuable researches on the subject.

I have mentioned that Bignami also, amongst others, believed in the mosquito theory of malaria; but he considered that the mosquitoes acquired the specific organism from the soil (*e.g.*, of marshy places), and then inoculated them into human beings by their bite. His reasons were some of those which had already been advanced by King, and were not, I think, weighty enough of themselves to form the basis for anything approaching a scientific induction; while his conception that the organism passes originally from the soil through the mosquito to man appears to me to be at variance with general parasitological principles. On the other hand he refused to accept the chief arguments on which the theory really rested, namely, those of Laveran and Manson; because, with many others, he believed the motile filaments to be not living bodies, but products of disintegration—always a feeble hypothesis. As early as 1894 he had attempted, in pursuit of his hypothesis, to infect healthy human beings by the bites of gnats taken from malarious localities; but had abandoned the attempts on the first failure—a proof possibly of the weakness of the original conception on which the attempts were founded. Now, however, after the success of the investigations with *Hæmamœba relicta*, he, with Grassi and Bastianelli, resumed the study of the question.

As I have said, Manson announced my earlier work in June, 1898. In this paper he gave not only an account of the zygotes (well illustrated) and of the experiments which absolutely proved their connection with the parasites in men and birds, but also added MacCallum's observation, and explained its connection with my work in a masterly manner. In short, his paper announced what was really the proof of the mosquito theory of malaria—the successful cultivation of two species of Hæmamœbidæ in mosquitoes. By a coincidence, it appears to have been in the same month that Professor Grassi commenced his original researches on the subject in Italy. He began by studying the comparative prevalence of mosquitoes and malaria in

various parts of that country—a method which I had attempted a year previously in India. The conclusions he came to were that the mosquito-theory "explains all the phenomena of malaria," and that three species of gnats may be concerned with its propagation in Italy, namely, "*Culex penicillaris* and *Anopheles claviger*, or any way *Culex penicillaris;* perhaps also *Culex malariæ*." As a matter of fact, Grassi's more recent researches, based on more accurate methods, appear to have now proved that two of these species, the species of Culex, have no connection with the disease—a fact which simply illustrates how untrustworthy was the method adopted by him. By a second coincidence, however, the third species, the *Anopheles claviger*, is now known to have two of the characteristics which I had already published as belonging to my dappled-winged mosquitoes in which I had first found the human zygotes, namely, spotted wings and boat-shaped eggs. These observations of Grassi's were published in September, 1898.

Using these species of gnats, Grassi, Bignami, and Bastianelli now attacked the subject in earnest. They endeavoured to infect: (*a*) Healthy men from presumably infected mosquitoes; and (*b*) Healthy mosquitoes from infected men. It should be noted that these methods were simply a repetition of those employed by me. The *Anopheles claviger* at once yielded positive results. The zygotes and blasts of the æstivo-autumnal parasite were found in the infected mosquitoes, from the bites of which in turn healthy men became infected. Next, the parasites of tertian and quartan fever were cultivated, both in *Anopheles claviger;* so that it was found that all the human species are communicable by that kind of gnat. At the same time other Italian species of *Anopheles* were incriminated, while various species of gnats of the genus *Culex* gave negative results, as I had found before. The cytology of the zygotes and blasts was studied more exactly, and it was shown that all the human parasites have a development in the mosquito almost precisely similar to each other and to that found by me for *Hæmamœba relicta*—as indeed was to be expected from the first. Lastly, some of the habits of *Anopheles* were made out, especially by Grassi.

Independently, and almost simultaneously, Professor Koch made similar experiments, and confirmed our results with the weight of his authority. It is now therefore scarcely justifiable to adopt a sceptical attitude in regard to these discoveries.

On reviewing the whole subject, then, it will be obvious that the solution of this problem involved the conquest of three great difficulties. First, it was necessary to obtain a *working clue* for experimental re-

search; this was given by Manson's induction regarding the gametocytes. Next, it was necessary to explain the meaning of the "*motile filaments*"; this was done by MacCallum's observation as interpreted by Manson. Thirdly, we had to find by direct and laborious research those two unknown quantities, the *proper species of mosquito*, and the *form taken by the parasite* within the insect; here my observation of the zygotes of the æstivo-autumnal parasite and of *Hæmamœba relicta* within *Anopheles* and *Culex* respectively supplied the required answer. The rest was easy. It did not matter which species of the Hæmamœbidæ was used for further investigation. The completion of the history of the zygote, the observation of the blasts in the salivary glands, and the infection of healthy birds followed as a matter of course; so did the extension of these results to other species of the Hæmamœbidæ by Koch, Bignami, Bastianelli and Grassi.

The result of all these investigations, then, has been the completion of our knowledge of at least one cycle of the life-history of the parasites, and the discovery of one mode of infection. The Hæmamœbidæ do not, as we supposed, rise from the soil or water of malarious places and then enter men and birds, but are what is called *metoxenous* parasites, that is, parasites which require two hosts for the full cycle of their existence. Thus, men, birds, and other vertebrates are the *intermediary* hosts, while gnats are the *definitive* hosts; in other words malarial fever is, like most maladies, a communicable disease, and is carried from the sick to the healthy by certain kinds of gnats.

Certain important questions, however, remained to be considered. These will now be discussed.

Practical Outcome.—Are these discoveries likely to assist us in finding a more effective prophylaxis against malarial fever?

My own researches had been undertaken from the first chiefly with a view to obtaining useful practical results. We knew previously that the disease can often be extirpated by drainage of the soil; it became evident, as soon as Manson had erected his theory, that if we could determine the species of gnats implicated in carrying the disease, we might hope to improve largely upon this method of prevention by learning how to indicate the precise pools of water, spots of ground, etc., which give rise to "malaria" in a locality—that is, which give rise to these dangerous species of mosquitoes.

My first experiments, from 1895 to 1897, with one doubtful exception, tended to prove that the commoner kinds of Indian gnats—called by me "grey mosquitoes" and "brindled mosquitoes"—were not concerned in the propagation of human malaria. On the other hand,

when I found the æstivo-autumnal zygotes in two species of a third and less common variety of mosquito—which I called provisionally "dappled-winged mosquitoes"—it became highly probable that this variety is the one which carries the human parasites, at least the æstivo-autumnal parasites. I had learned easily to recognise the difference between these varieties, although, owing to the fact that I could obtain no information on the subject of gnats in India, I thought it best to make no attempt to give the insects their proper zoological names. I have now been able to obtain more definite knowledge, and have ascertained that my "grey" and "brindled" mosquitoes both belong to genus *Culex*, while my "dappled-winged" insects belong to genus *Anopheles*. It should be understood that by these adjectives I implied not individual species, but groups of species: thus, "grey mosquitoes" referred to gnats of the *Culex pipiens* type; "brindled mosquitoes" to the *Culex tæniatus* type; and "dappled-winged mosquitoes" to all species of *Anopheles* which I had found in India.

While studying the habits of these insects I was early struck by the remarkable fact that the larvæ of the grey and brindled gnats (*Culex*) were generally to be found in *vessels* of water, such as pots and tubs, while those of the dappled-winged mosquitoes (*Anopheles*) were to be discovered only in pools of water on the ground. Supposing, as my observations indicated, that only genus *Anopheles* was concerned in the distribution of human malaria, the origin of this kind of gnats from puddles would, I thought, easily account for many of the well-known laws of malaria, such as, that it springs from the soil, especially from the soil of flat, low-lying, marshy localities, that it is connected with rainfall, and that it can often be removed by drainage of the ground. Further than this, I thought I saw in this habit of *Anopheles* a clue to the easier extirpation of malaria. It was noted that only a few puddles on the ground, namely those which do not contain small fish, which do not dry up too quickly, and which are not liable to be scoured out by heavy rain, are suitable for the larvæ of gnats: in other words, the puddles which are suitable for them seemed to be so small and comparatively rare, and so easily detected by the presence of the larvæ, that I thought it might be an easy and cheap task to fill them up or drain them away, thus preventing the propagation of the insects. And, of course, by preventing the propagation of the gnats, we could remove the definitive hosts of the parasites and thus prevent also *their* propagation, and so check the prevalence of the disease. Whereas formerly we were obliged to drain the whole of the malarious area, we should now be able to confine ourselves to the few small puddles

in which the *Anopheles* larvæ live—hypothetically, an immense saving of labour and expense.

These ideas, though Dr. Manson and I were familiar with them as early as 1897, were reported to the government of India in February, 1899, and were fully discussed later in a public lecture ("British Medical Journal," July 1st). Meantime, however, they had received a great reinforcement from the Italian observers, who had shown, by accurate methods, that the several species of Italian *Anopheles* can carry the human parasites, while the Italian species of *Culex* apparently cannot do so. This strongly supported the view that it is everywhere only insects of the genus *Anopheles* which are concerned in the propagation of the disease; so that it now became most necessary to investigate whether or not these gnats can be exterminated from a given locality.

Early in August, the Liverpool School of Tropical Diseases sent an expedition, consisting of L. L. Austen, Esq., Dipterologist of the British Museum, Dr. H. L. Annett, Demonstrator of the school, and myself, to Sierra Leone, for the express purpose of studying this question. We ascertained at once that two local species of *Anopheles* are capable of being the definitive hosts of the human parasites—that is, we found the zygotes and blasts of the parasites within these insects. Next we made a careful study of their habits, and the distribution of their breeding pools within the area of Freetown. The result completely confirmed my early but incomplete observations. We discovered on the whole about a hundred breeding pools of *Anopheles* in the town. Most of these existed in the ditches by the side of flat sections of road; others in hollows of rocks; others in connection with small runnels of water oozing from the ground after rain. Nearly all were supplied with water by the rain and were not so large and permanent as to contain fish, nor so small as to dry up between the showers of rain, nor placed in such a position as to be scoured out by heavy rain. Most of them contained green water-weed (which the larvæ feed upon), and all were in proximity to human habitations. We found no *Anopheles* larvæ at all at a distance from houses, nor in quickly running streams, nor even in marshes and mangrove swamps. In only one instance were they discovered in a vessel of water; though *Culex* larvæ abounded in every pot, tub, empty tin or gourd in which a little water had collected.

We decided, as regards Freetown, that the best way to exterminate the insects was to drain away or to fill up their breeding pools. Failing this, the larvæ can be easily killed by applying a little kerosine oil (paraffin) to the surface of the puddle by means of an oiled rag;

but this process must be repeated at least twice a week for months, and a man must be maintained specially for the purpose. Tar and other culicicides may be tried.

It is easy for any one to distinguish between gnats of genus *Culex* and those of genus *Anopheles*. The females of the former have short palpi; of the latter long palpi. The former generally have plain wings; the latter generally spotted wings. The former sit on a wall with the body hanging downwards parallel to the wall; the latter with the body projecting from the wall at an angle of about 60°. The larvæ of *Culex* float on the surface of the water with the head hanging downwards; those of *Anopheles* float flat on the surface like sticks. *Culex* larvæ have a long breathing-tube close to the tail; *Anopheles* larvæ have none, the openings of their air-tubes being flush with the dorsal surface. Lastly, *Anopheles* larvæ move on the surface of the water with a peculiar backward wriggle. These points will enable medical men to recognise *Anopheles*, either larvæ or adults, without difficulty.

Where *Anopheles* are present but, from any cause, cannot be exterminated, wire gauze to the windows, and mosquito-nets or punkahs at night should be employed.

Laws of the Diffusion of Malaria explained.—How well these peculiar habits of *Anopheles* suffice to explain the well-known laws regarding what we thought was "malaria" is obvious, and scarcely requires further reference. We were quite right in thinking that the disease is connected with stagnant water, rainfall, and so on; but we were wrong in the way we interpreted this connection, It is not the *germ itself* which springs from the stagnant water or the soil, but the *carrier* of the germ—the *Anopheles*.

One point requires mention. It has long been thought that malaria often breaks out when soil is disturbed. King long ago explained this by his mosquito theory. Disturbing the soil, as in making railways and so on, may often lead during rain to the formation of puddles of water in which *Anopheles* larvæ can live.

Is Malaria acquired in any Other Way than by the Bites of Gnats?—So far as I can see, all the known phenomena of malaria are explained by the facts which I have given in the preceding pages, so that there appears to be no solid theoretical ground for supposing that the disease is acquired in any other way than the one indicated above.

If there be any other way, the parasites must possess another cycle in their life-history in addition to the one already discovered. This appears, for zoological reasons, to be improbable.

Hence we can say that, while it is absolutely certain that the disease is carried by *Anopheles*, there is no reason for supposing that it is

communicated in any other manner. We cannot positively exclude the possibility of another channel of communication ; but we should not believe in it until it is proved to exist.

Can other Species of Insects carry Malaria?—Accepting the life-history of the parasite as now known, we may still think that other insects besides *Anopheles* may just possibly be the definitive hosts. How far is such a view justifiable ?

As a matter of fact the human zygotes have not as yet been found in any other insect, not even in *Culex*, to a certainty. Again, for reasons already given, malaria must be connected with suctorial insects which chiefly emanate from *water lying on the soil*. I think that few suctorial insects except *Anopheles* have this origin ; certainly the majority of the species, even of gnats of genus Culex, have not. Hence it seems improbable, though of course by no means impossible, as yet, that other insects besides *Anopheles* convey malaria. The question must be fully worked out.

Objections to the Mosquito Theory.—After the full experimental proofs which have now been obtained of this theory, scepticism is scarcely justifiable among those who have to tend the health of others in the tropics. Objectors still exist, of course ; but it will generally be found that they possess no accurate knowledge of the subject—as, for instance, when they argue that mosquitoes exist where there is no malaria, or that one can be bitten without becoming infected, and so on. A better objection is often made, to the effect that malaria exists where there are no mosquitoes. Here it must be remembered that many persons are very lacking in powers of observation ; that one may often be bitten without knowing it, especially in sleep ; and that *Anopheles* do not seem to hum so much as *Culex*. At any rate, I have on several occasions been able to correct such statements after personal enquiry ; and I advise the reader to be equally sceptical regarding them. Those who think that the objects found in the mosquitoes are not really the developmental forms of the parasites in men cannot have studied the literature.

Advice to Medical Men.—Numerous men have written to me asking for advice as to how to commence a practical study of the subject for themselves. I recommend them not to commence with attempts at finding the zygotes, but to begin by searching for *Anopheles*, by seeking their breeding pools, and by studying their habits. After this the zygotes may be looked for in insects taken from the sleeping-rooms of patients with gametocytes in their blood ; but this requires a sound knowledge of the parasites, and of microscopical methods. Direct cultivations should be tried last of all.

Literature.—The "Indian Medical Gazette," December, 1898, contains my original report on the zygotes, with details of *technique*. Accounts of how to attack the practical question, including descriptions of *Anopheles* and their habits, will be found in certain numbers of the "British Medical Journal," and "Lancet," for September and October, 1899. The full history and literature of the subject is admirably given by Dr. G. H. F. Nuttall in his work, "The Rôle of Insects, Arachnids and Myriapods, as Carriers in the Spread of Bacterial and Parasitic Diseases of Man and Animals"; "Johns Hopkins Hospital Reports," vol. viii. (Baltimore). Read also Koch, "Entwickelung der Malariaparasiten, Zeitschrift für Hygiene," 1899, Veit and Company, Leipzig; Grassi, Bignami and Bastianelli, in the "Annali d'Igiene Sperimentale," 1899; and a paper by me in "Nature," August 3rd, 1899.

NOTE.

No one supposes that the possibility of exterminating *Anopheles* anywhere is as yet anything but an open question. The above remarks on the comparative rarity of the breeding-pools have been based only on observations in a few localities; and it may well happen that in some waterlogged places the pools will be far too numerous to admit of any treatment. Large rural areas will, of course, generally present hopeless difficulties. All we can say at present is that it *may* be possible to eradicate *Anopheles* from *some* towns and plantations. But all this does not exonerate us from attempting to eradicate them when we can do so.

MEASLES. *Henry Dwight Chapin, M.D., New York.*

Dr. A. Koeppen[1] describes the symptom of Bolognini in measles. This consists in a *peculiar sensation of friction*, felt when gently rubbing the tips of the fingers over the surface of the abdomen with gradually-increasing force. Bolognini states that this phenomenon can be appreciated from the prodromal period on to the end of the disease, and is due to a morbillous eruption upon the peritoneum. In an epidemic of three hundred and sixteen cases the author observed this symptom in one hundred and fifty-four cases. He did not notice a sensation of friction, however, but rather a fine crepitation which recalls that given by subcutaneous emphysema, and seems to be due to the presence of bubbles of gas in the intestines. Hence, this cannot be considered as a pathognomonic of measles.

Dr. Slawyk[2] confirms Koplik's early diagnostic sign of measles He found the peculiar spots on the mucous membrane of the cheeks and lips in forty-five cases out of a total of fifty-two examined. The spots vary from 0·2 to 0·6 mm. in size, are round, bluish-white, slightly raised, and have a reddish centre about the size of a linseed. They

are found in no other disease, and as they appear on the first or second day of the prodromal symptoms they constitute a very important early sign.

REFERENCES.—[1] "Centralb. f. innere Med.," No. 26, 1898; [2] "Deut. med. Woch.," No. 17, 1898.

MELANCHOLIA. (See "Insanity.")

MENINGITIS IN CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. G. Schirmer[1] advises the treatment of epidemic cerebro-spinal meningitis by inunctions of **Unguentum Credé.** The author's method of treatment is as follows:—

(1,) Inunctions of 30 grms. (1 ounce) of unguentum Credé daily for three days, and a further 10 grms. ($\frac{1}{3}$ ounce) at each relapse.

(2,) Very hot water applications to the spinal column when there was great pain.

(3,) Antiseptic cleansing of the nasal cavities as soon as the general condition of the patient permitted it to be undertaken.

(4,) Small doses of trional when there was great restlessness.

Dr. A. H. Wentworth[2] holds that primary cerebro-spinal meningitis is caused by the diplococcus intracellularis meningitides. The manner in which infection occurs is still unknown. Nothing positive is known about the contagiousness of the disease or the duration of the stage of incubation. The lesions consist of an inflammation of the pia-arachnoid. The exudation is confined in the meshes of the pia; none is found on the surface of the arachnoid. In the most acute cases the exudation is slight in amount and purulent. In acute cases of longer duration there is more fibrin in the exudation. The changes in the brain consist of softening and infiltration of the cortex with pus cells which extend in from the meninges, and of foci of softening in the interior of the brain. There is also some proliferation of the neuroglia cells of the cortex. The exudation extends along the cranial nerves, those most affected being the second, fifth and eighth pairs. The meninges of the cord are always affected, and the exudation is found chiefly over the posterior surface of the lumbar cord. The onset is sudden and frequently severe. In most cases the earliest symptoms are headache, vomiting and fever. Several well-marked types of the disease occur; they have been classified as foudroyant, acute, intermittent, chronic and mild cases. The commonest complications are lesions of the eyes and ears. The lesions in the eyes result from extension of the inflammation along the optic nerves, often causing optic neuritis and atrophy. Lesions of the lungs are

not common, but focal pneumonias have been found in which the diplococcus intracellularis has been found, while other pathogenic organisms are generally present. On lumbar puncture the fluid obtained is more or less turbid. In severe acute cases a puriform deposit frequently settles to the bottom of the test-tube in a short time. Microscopic examination of cover-glass preparations made from the sediment shows numerous polymorphonuclear leucocytes, "pus corpuscles," occasional smaller mononuclear lymphoid cells and fibrin.

Dr. Morti[3] considers the diagnostic and therapeutic value of **Lumbar Puncture,** with the following results :—

(1,) In tubercular meningitis the punctures were without diagnostic or therapeutic value.

(2,) In cerebro-spinal meningitis the examination of the cerebro-spinal fluid is of assistance in determining the diagnosis.

(3,) In cases of cerebro-spinal meningitis in which the acute stage is passed with resulting hydrocephalus, the examination of the cerebro-spinal fluid renders no assistance.

Dr. Henry D. Chapin[4] calls attention to a peculiar and intense form of dyspnœa that may rarely be seen in connection with severe cases of tubercular meningitis. As far as the writer can find, very little attention has been paid to this peculiar and distressing symptom. Three cases are cited in which all the symptoms of acute stenosis of the larynx suddenly developed. There was a sucking-in of the soft parts on inspiration, and dropping of the larynx. In one case the dyspnœa became so severe that intubation was performed. It is difficult to explain exactly why these cases presented the evidences of extreme stenosis or obstruction to the entrance of air. In two of the cases in which an autopsy was performed there was no membrane nor any apparent cause for this dyspnœa. Whether it was due to pressure upon the laryngeal nerves by the enlarged bronchial glands, or to some cause acting upon the respiratory centres in the medulla, it is difficult to say.

Dr. Geo. F. Still[5] reports a form of simple posterior basic meningitis in infants, which differs markedly from other forms of meningitis in its morbid anatomy, and this fact, together with the constancy of its clinical and pathological features, seems to point to its being a specific disease due to some micro-organism. In seven out of a series of eight cases reported last year he found a diplococcus which, so far as the evidence went, appeared to be the specific cause of the disease. The one case which proved sterile died three and a half months after the onset of the disease.

REFERENCES.—[1] "New York Med. Monats.," vol. x, No 11, 1898; [2] "Boston Med. and Surg. Jour.," vol. cxxxviii, Nos. 11 and 14, 1898; [3] "Arch. f. Kinderh.," B. xxiv, H. i, ii, 1898; [4] "Arch. Ped.," vol. xvi, No. 2, 1899; [5] "Brit. Med. Jour.," No. 1972, 1898.

MENINGOCELE. (See "Spine.")

MENSTRUATION (Disorders of).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

There has been a lull in the advocacy of new measures, both therapeutical and surgical, in the treatment of the functional disorders of menstruation.

Amenorrhœa.—Murrell,[1] to whom we are indebted for senecio, reports two cases of amenorrhœa treated by means of a new soluble salt of **Manganese,** viz., the citrate. The first case was one of uncomplicated oligochromæmia. For the first fortnight no treatment was resorted to, in order that the possible effect of expectation, rest, and change of diet might be eliminated. Citrate of manganese was then ordered in 5-grain doses three times a day. Nine days later she commenced menstruating—the first appearance for nine months; the period was very profuse and continued for two and a half days. The second case was one of oligocythæmia with considerable oligochromæmia. Menstruation had never been regular, and for seven months had been absent. She was ordered 5 grains of the sulphate of iron, in pill, three times a day, with ℥j **Sulphate of Soda** in hot water every morning. After a fortnight she had improved in strength and colour, but menstruation was not restored. She was then ordered 5 grains of the citrate of manganese three times a day, the dose being increased till at the end of ten days she was given 15 grains four times a day. Five days later she menstruated, the period lasting two days.

In an editorial annotation[2] in "The Medical Press and Circular" the writer questions whether any emmenagogues have any specific action except in so far as they improve the general health; and his contention is probably valid to this extent, that whereas several drugs are known to have the power of exciting uterine contractions, it is very doubtful whether any drug can directly cause the resumption of suspended ovulation.

REFERENCES.—[1] "Med. Press and Circ.," Dec. 20, 1899; [2] Ibid., Dec. 27, 1899.

METRORRHAGIA.

Synopsis.—(Vol. 1899, p. 42). Hydrastinine Hydrochlorate, gr. $\frac{1}{6}$ to 2.

MIGRAINE. *Græme M. Hammond, M.D., New York.*

Hirtz[1] speaks highly of the value of **Antipyrine** in this affection, particularly if it is given in combination with 8 grains of bicarbonate of soda. When there is a great deal of nausea, the antipyrine alone may be used hypodermically, or per rectum, combined with a few drops of laudanum. **Caffeine** and **Sodium Benzoate,** 4 grains each, often act very well, and the dose may be repeated every two hours until four doses have been taken. The same dose, dissolved in distilled water, may be injected hypodermically.

Lauder Brunton[2] recommends a combination of 6 grains of **Sodium Salicylate** with 10 grains of **Potassium Bromide.** **Methylene Blue** is recommended in that form of migraine known as angiospastic. It is best prescribed as follows :—

℞ Methylene-blue, (C.P.) grs. jss | Powdered Nutmeg grs. jss
Make one capsule. Sig.—One capsule four times a day.

Migraine, which is a combination of antipyrine, caffeine, and citric acid, is often serviceable.

Rheumatic or gouty subjects should be put upon a strict diet. No nitrogenous or indigestible vegetable food is allowed at night; in the morning, a glassful of Carlsbad water heated to 104° F., or Vichy water, is taken, and at night 1 pill of the following composition :—

℞ Ext. of Aconite gr. ss | Ext. of Colchicum grs. iij-vj
Ext. of Digitalis grs. iij | Quinine Valerianate grs. xv
Divide into ten pills.

A writer in the "Rivista clinica e terapeutica" says that **Salophen** acts very rapidly in relieving migraine; 15 grains may be given to begin with, in cachets or dissolved in water, and the dose may be repeated at the end of an hour.

REFERENCES.—[1] "Amer. Med. and Surg. Bull.," July 25, 1898; [2] "New York Med. Journ.," May 21, 1898.

MULTIPLE NEURITIS (In the West Indies).

James Cantlie, F.R.C.S.

Dr. Henry Strachan[1] draws attention to many hundreds of cases of multiple neuritis, which have come under his observation in Jamaica. The chief features of the disease are: (1,) A more or less widespread neuritis, involving some of the nerves of special sense, especially the optic nerve; (2,) The occurrence of trophic changes in the skin along the distribution of the nerve terminations, in the muscles, in the muco-cutaneous lines, and occasionally in the cornea; (3,) The rare, but still to be noted, occurrence of monoplegias; (4,) The fact that the disease may be very severe, lasting for many months or even years; (5,) The fact that recovery is the rule and a fatal termination very

rare ; and (6,) That it attacks many hundreds of persons, at least in Jamaica, the great majority of these being the black or coloured inhabitants, who constitute the bulk of the population, though the white residents are not exempt by any means.

Dr. Strachan is inclined to ascribe the cause to malaria, more especially as **Quinine** acts more or less as a specific.

REFERENCE.—[1] "Pract.," Nov., 1897.

MUSCULAR DYSTROPHIES.

Græme M. Hammond, M.D., New York.

Eshner[1] reports twenty cases of this interesting disease. The study of these cases throws but little light on the pathogenesis, in regard to which the author is forced to admit that absolutely nothing is known. As this affection manifests itself almost invariably in the early period of life, the thought naturally arises that it may be due to some aberration of development. On the other hand, as the muscular affection is variable, and widespread in distribution, and progressive in course, it is not unreasonable to suppose that it may be dependent upon a general metabolic disturbance, such as may arise from derangement of some internal secretion. It is on account of the latter reason that the veiw promulgated by Macalister is entitled to thoughtful consideration. This observer has formulated the hypothesis that all of the glandular structures of the body elaborate substances that exert a controlling influence upon the growth of individual tissues. In these morbid conditions, characterised by hyperplasia or hypoplasia of a single tissue-element, there may be supposed to be an absence or a perversion of the secretion that physiologically controls the growth of that particular element.

The occurrence of the muscular dystrophies corresponds in time with the period of functional activity of the thymus gland, and it is thought that premature cessation of the secretion of this gland may be responsible for the trophic changes that take place in the muscles.

Upon the strength of this hypothesis, the employment of **Thymus Gland** or an extract of the gland, has been recommended. He cites Lepine as having used thyroid gland in the treatment of two cases, in both of which increase of muscular vigor followed, and in one there was an increase in the size of the wasted muscles.

REFERENCE.—[1] "Amer. Journ. Med. Sci.," Sept. 1899.

MYCETOMA. *Lt.-Col. W. Keith Hatch, I.M.S. (Bombay), F.R.C.S.*

Mycetoma is caused by a vegetable parasite, a variety of ray fungus apparently allied to that of actinomycosis. The disease was minutely described by Dr. Vandyke Carter, who had long suspected but had

been unable to demonstrate its nature microscopically. Owing to the foot being the part usually affected, the names "Fungus foot of India," or "Madura foot," were applied to this condition. In the Bombay Presidency this disease is not common, and the following table shows the number of cases admitted into the Jamsetjee Jejeebhoy Hospital of Bombay :—

Cases of Mycetoma admitted during Twenty Years in the Sir J. J. Hospital commencing from the Year 1878.

Year.	Admitted.	Result.			
		Cured.	Relieved.	Otherwise.	Died.
1878	1	—	—	1	—
1879	3	3	—	—	—
1880	2	1	—	1	—
1881	2	—	—	2	—
1882	9	4	—	4	1
1883	7	2	—	5	—
1884	4	1	—	3	—
1885	4	4	—	—	—
1886	2	2	—	—	—
1887	2	—	—	2	—
1888	3	1	—	2	—
1889	1	—	—	—	1
1890	7	3	2	2	—
1891	4	3	—	1	—
1892	2	1	—	1	—
1893	5	2	1	2	—
1894	4	2	—	1	1
1895	5	1	4	—	—
1896	8	3	3	2	—
1897	1	1	—	—	—
Total ...	76	34	10	29	3

Although the foot is the part usually affected, the hand is sometimes also attacked, and a case was published by the writer in which the leg, knee, and lower part of the thigh were diseased. The fungus is probably introduced through a puncture of the foot, and as natives of India engaged in agricultural pursuits are nearly always bare-footed, they are extremely likely to be pricked when walking among some of the very strong and sharp thorns, as those of the babool tree, which have fallen on the ground, or which have been placed as hedges to prevent cattle from wandering into fields. It is not clear whether the fungus is introduced at the time of puncture or subsequently ; most likely, the

wound being unprotected or unnoticed, the introduction of the fungus takes place while walking over places where it is present.

Cases have been seen by me in the early stage when the disease was confined to the big toe (*Plate XVI, Fig. A*), to one of the fingers, or to the ball of the foot. It is not usual for both feet to be diseased at the same time, nor do I know of any such recorded case. *Fig. B* shows disease of the toe and part of the sole.

Pathological Anatomy.—Just as the parts bear a considerable resemblance to tubercle externally, so also on section, the misshapen, thickened and brawny tissues in mycetoma might be mistaken for the conditions met with in that disease. The normal appearance of the part in the early stage is not, however, much interfered with ; nodules are formed either in or beneath the skin, which have a yellow, black, or in some cases, a reddish appearance. These contain the characteristic bodies resembling "roe," or grains of black or smokeless gunpowder. In more advanced cases these deposits are found in the deeper strata, together with a considerable quantity of fatty tissue, the muscular fibres of the part having almost entirely disappeared and become converted into fibrous tissue or fat. The nodules can be easily scraped out like those of tubercle, leaving round, shot-like cavities. Still later the same round excavations will be found in the bony parts, connected together by fine channels ; the bone itself has become extremely rarified, is usually reddish in colour, and allows the probe to penetrate through its substance with little or no resistance.

Abscesses may be met with superficial to or between the altered muscles, containing large collections of the seed-like bodies. The appearance of the bones is shown in *Plate XVII, Figs. C* and *D*, and may be compared with a similar dried preparation of bones from a case of leprosy (*Plate XVIII, Fig. E*), while *Fig. G, Plate XIX*, shows the appearance of the whole foot.

Symptoms.—As a rule the disease begins and spreads without any pain being experienced by the patient, his attention being first attracted to the part by the formation of a small swelling, which bursts, and discharges a puriform fluid. This swelling extends, and if situated on the sole of the foot or palm of the hand that surface becomes curved and brawny, and, in the case of the foot, slightly tender on walking. As the disease advances the toes and fingers become gradually buried in the swelling of the sole and dorsum (*Plate XX, Fig. H*, and *Plate XXI, Fig. I*), or sinuses form on various parts from which the seed-like bodies are discharged ; but this point is seldom noticed by the native patient. The whole part becomes then extremely misshapen, and something like a large potato or yam

in appearance, especially if the digits are thickened or distorted. In some instances quite superficial blister-like swellings have been noticed from which the seed-bodies can be obtained by incisions. A probe can be made to pass readily through the soft parts and bones, the latter having a papery feel. The patient can usually walk fairly for several years unless the sole is much bulged, and is therefore loth to come for treatment until a late stage. His general health is not impaired except in very severe cases. In the instance referred to and published in the "Lancet" by the writer, that of a Seedie sailor shown in *Plate XXII, Fig. K*, the disease was very extensive and ultimately caused death.

The glands are often enlarged, and may exhibit, on section, pigment and the fungus itself; hence the disease may re-appear in the tissues after amputation of a limb, as I have seen in several instances.

Diagnosis.—As a rule there is little difficulty in diagnosis, except in the early stage of the disease. Discovery of the seed-like bodies makes the matter absolutely certain. Sometimes, however, they are not so easily found as might be supposed, and it may be necessary to incise the part with the object of discovering any of the collections of these bodies in the deeper tissues. Formerly, no doubt, tubercular disease, particularly of the tarsal bones, was mistaken for mycetoma. The thickening of the toes, bulging of the sole and dorsum are marked in mycetoma, and the bones are even less resistant to the probe. The semi-fluctuating feel due to tubercular disease of the synovial membrane is not present in mycetoma.

The presence of a foreign body in the hand by irritating the tendons and soft parts, and causing the formation of sinuses, may cause, as depicted in *Fig. F, Plate XIX*, appearances which might give rise to considerable difficulty; in this instance a portion of a bradawl was found imbedded among the tendons of the wrist, and on slitting up the sinuses the granulation tissue found was remarkably like that due to tubercular disease, but the removal of the foreign body completely cured the patient, and it will be seen that the shape of the hand was not altered as is the case in mycetoma.

Treatment.—This is unfortunately limited to **Amputation of the Part,** sooner or later. In actinomycosis the exhibition of Iodide of K. and scraping have been followed by good results. I have tried both extensively in mycetoma with practically no kind of improvement. When the sole of the foot or palm of the hand has been alone diseased I have freely excised the affected tissues with no better result, nor does the injection of carbolic acid improve matters.

Consequently, it must be left to the surgeon to decide whether he should amputate early or wait until the part has become useless. When a digit and the part in the neighbourhood are alone diseased in an early stage, then the removal of the toe or finger may prevent the disease from spreading. If, however, it is hopeless to amputate a toe only with any chance of success, then, in my opinion, it is justifiable to wait and to allow the patient the use of the limb as long as may be. This applies particularly to the foot, as an agricultural labourer can do without a hand, but can ill spare a foot. Unfortunately, however, if the sole is early affected the foot soon becomes useless and must be removed. The glands must be also attended to, and it is as well to remove them if enlarged, and also to amputate well above the diseased part in case the lymphatics are affected. In a case at the J. J. Hospital, although an amputation had been performed, the disease re-appeared in the stump, apparently in the course of the lymphatic vessels.

MYELITIS.

Synopsis. (Vol. 1898, p. 388). **Belladonna Extract,** gr. $\frac{1}{8}$ to $\frac{1}{4}$ twice daily for constipation; also **Glycerin Enemata** and **Massage** of abdomen. Ergot and Belladonna to allay inflammation; **Iron** and **Quinine**; **Counter Irritation** to spine. As a tonic, small doses of **Strychnia.** In some cases **Arsenic** and **Chloride of Aluminium** proved useful.

MYOPIA. *F. Richardson Cross, M.B., F.R.C.S.*

Operative Treatment of High Myopia (cf. "Med. Ann.," 1899, p. 595).—Patients suffering from extreme short sight are thereby rendered incapable of following many of the ordinary occupations of life, as in the case of servants, labourers, or handicraftsmen, while as clerks their employment tends continuously to render their condition worse. Even amongst the more leisured classes complaints are made of difficulty in wearing with comfort the spectacles which are required to give good long sight. Further, it is an interesting fact that, as the amount of myopia increases in the higher degrees (above 4D), the power of seeing with spectacles at a distance becomes progressively more imperfect, *e.g.*, a myope requiring correction of 18D, rarely sees more than 6/36. The deficiency of farsight, even under correction by glasses, and the numerous well-recognised disabilities of high myopia have naturally given rise to speculations whether some kind of operative interference might be employed to remedy the faulty condition of the sight.

By far the most important factor in the causation of myopia is the lengthened axis of the eyeball, in consequence of which the principal focus of the dioptric system of the myopic eye is situated at some

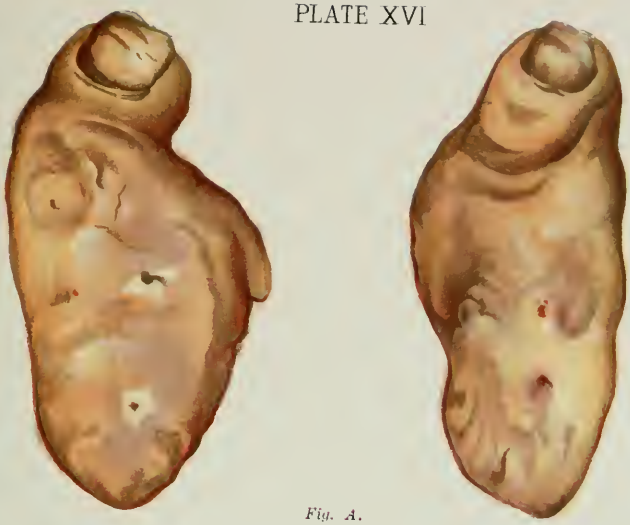

Fig. A.

Mycetoma of the Toe.

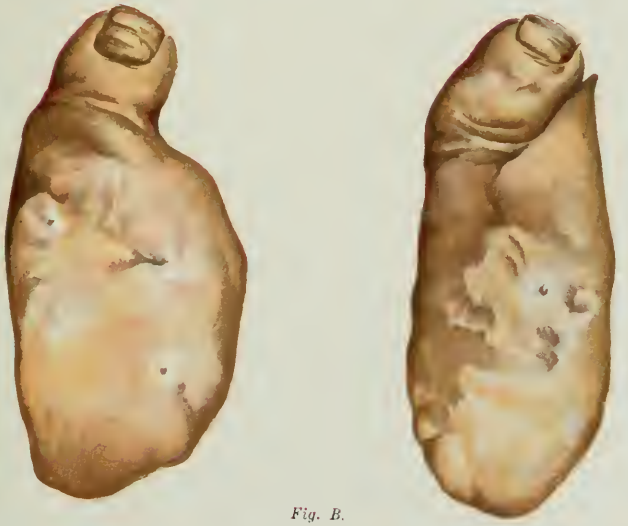

Fig. B.

From a specimen in Grant Med. Coll. Museum, showing disease of the big toe and part of the sole of foot.

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Fig. C.

Fig. D.

From specimens in the Grant Med. Coll. Museum, showing the round holes and channels in the bones of the foot.

PLATE XVIII.

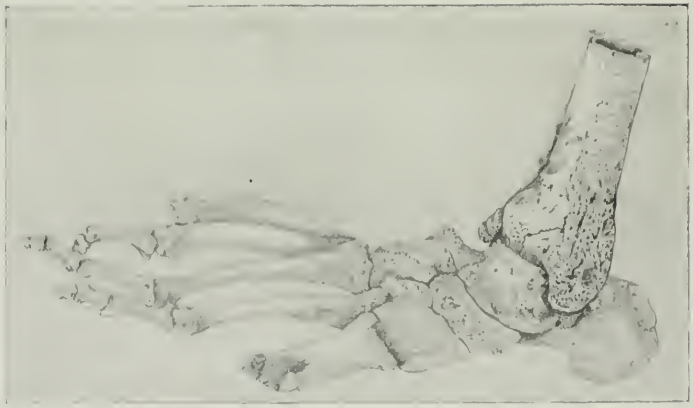

Fig. E.

From a specimen in the Grant Med. Coll. Museum, showing bones of the foot from a Leprous patient.

Fig. F.

Fig. G.

Fig. F.—From a drawing in the Grant Med. Coll. Museum, showing sinuses, the result of a foreign body embedded among the tendons of the wrist.

Fig. G.—From a specimen in the Grant Med. Coll Museum, showing mycetoma of the foot.

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Fig. II.

From a specimen in the Grant Med. Coll. Museum, showing white variety of mycetoma of the hand.

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Fig. 1.

From a specimen in the Grant Med. Coll. Museum, showing black variety of mycetoma of the right hand.

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Fig. K.

From a case in Jamsetjee Hospital.

distance in front of the retina. Second only in importance to the curve of the cornea as a part of this dioptric system, is the crystalline lens, and by its removal the principal focus is thrown back nearer to the retina. The effect produced on the sight by the removal of the lens is the more satisfactory the higher the degree of myopia originally present.

The operation modifies the eye as an optical instrument, and in suitable cases the improvement in distant vision after it is very marked. Almost all the patients are able to see at least as well after operation without any spectacles at all, as they could with very strong concave glasses before it, while with suitable lenses their vision is often increased three- or four-fold. The greater part of this improvement can be accounted for by the increase in the size of the retinal images of distant objects, owing to the altered dioptric conditions of the eye ; but it would seem that some of it depends upon improvement in the nutrition or functional power of the retina.

Various theoretical calculations have been worked out as to the amount of alteration in the refraction of myopes of different degrees, which is likely to follow after removal of the lens. As a simple rule, it may be stated that the strength of the glass which will be required to give the best distant vision after removal of the crystalline lens from a short-sighted eye can be found by subtracting half the amount of myopia present from 11D. Thus a myope with an error of 22D is likely to become emmetropic when his eye has been rendered aphakic, while a patient who required a lens of −7D before operation, would select + 7D as giving the best vision afterwards ; and I find that the majority of results in actual cases closely approximate those which might be expected from the calculations. Where the myopia is moderately bad, glasses may give good vision, and may be comfortably worn, making it inadvisable or even unjustifiable to recommend operative interference. The most brilliant and satisfactory results are obtained in the very high degrees of myopia, in which the patient for reading must put the print within a few inches of his eyes, and to see at a distance has to wear glasses of such high power as of themselves to produce discomfort.

The statements of patients, after they have undergone the operation, are the most definite evidence of the good which has been done. They rank amongst the most grateful of our clients ; they have no doubt in their own minds as to the great benefit they have derived and the comfort gained by discarding their spectacles, and by being able to see like other people. Most of them beg that the second eye may be cured like the other has been, but the

decision as to operation on both eyes must be carefully made. The myopic eye, by reason of its large magnification, is specially useful for reading and close work. But if it is rendered aphakic, it can no longer read without the use of a convex lens—and my experience has been that the convex lens required for easy reading will be one of high power, and that frequently the one which makes the eye as myopic as it was before the operation, is preferred for a time. This is probably due to the fact that the myope has always, for objects within his range of focus, enjoyed a larger retinal image than is present in normal eyes, and that he does not see comfortably unless the image is magnified so as to conform to his previous experience. Practically, therefore, it may be advisable as a rule to operate on the more short-sighted eye, in order to improve its distant vision, leaving the better eye intact and available for reading; but when the myopia of each eye is of very high degree (say 20D), they might both be operated on, and convex lenses be used for reading.

Each case must be judged upon its merits; the needs and occupation of the patient, his degree of myopia, and the condition of the tissues of his eyeball must be considered in forming an opinion as to whether an operation is advisable, and as to interference with one or with both eyes.

Nearly all the patients are young adults, as progressive myopia has rarely reached in childhood the degree at which operative interference would be considered necessary. The operation undertaken is removal of the crystalline lens, usually by discission with or without subsequent extraction, according to circumstances.

The needle puncture should be made far back in the limbus corneæ, and it is also important that the anterior face only of the lens should be broken up, so that its subsequent swelling may take place towards the aqueous chamber, and not backward towards the vitreous.

In children discission is very well borne, and the lens may be quietly absorbed, but as age advances there is an increasing probability of glaucoma resulting, and it will be necessary in the young adult to allow the escape of the dissolving lens by curette evacuation or suction, prior to the rise in eyeball tension, or at least directly this is found to be present.

The glaucoma following discission in the adult is not always relieved by a single curette evacuation, and it is wiser not to await the occurrence of tension, but to get rid of the lens substance four or five days after the discission. Where it is considered advisable to operate in patients of advancing years, a preliminary iridectomy may

be followed by extraction of the lens either with or without an effort to harden it by discission or artificial maturation.

The short-sighted eye seems specially liable to detachment of the retina, and this serious complication has in a few cases followed extraction of the lens, but reliable statistics indicate that the risks of this accident are not very greatly increased by operation in high myopia, while some authorities consider that removal of the lens is to a degree preventive as against detachment, and that it also improves the condition of the choroid and other intra-ocular structures.

There is a wide difference between operating for the relief of pain or to prevent or cure blindness, and running the risk of surgical interference merely with the intention of improving the existing conditions in an eye which is not threatened with blindness or serious mischief; but by operating for high myopia we gain a marked improvement in the degree of sight, and in the usefulness and comfort of the eye and of the patient, while the risks are largely to be avoided by careful treatment. Inflammation should be prevented by rigid antisepsis, properly executed manipulation, and judicious interference when complications threaten, while with the exception of corneal opacities and detached retina, there seems to be scarcely any condition of the ocular tissues which would contraindicate operation in cases in which a sufficient degree of myopia is present to render it justifiable.

MYXŒDEMA. *Græme M. Hammond, M.D., New York.*

Chapman,[1] in reference to the early diagnosis of this disease, calls attention to a diagnostic sign which has often proved useful. In chronic renal disease there is a certain sloppiness of the conjunctivæ, which is best observed by pushing up the lower eyelid at the outer angle of the eye. This is known as the "Bright's eye." In myxœdema the same condition exists, caused by the presence of mucin. When this condition exists, and the urine is of normal specific gravity and contains no albumin, there is every reason to suspect myxœdema.

Buchanan[2] reports the case of a man fifty-four years old, who had presented the symptoms of myxœdema for two years. He was treated with Oppenheimer's "palatinoids" of **Thyroid "Colloid."** Treatment was begun with 1 palatinoid at night. The dose was gradually increased to 4 in twenty-four hours, and then reduced to 2 a day, and later to 1 a day. There were no symptoms of thyroidism, and at the end of five months the patient was considered to be entirely normal in every respect. He continues to take 1 or 2 of the palatinoids daily. For a full account of the chemistry and prepara-

tion of "palatinoids," see "British Medical Journal," March 21, 1896, January 23, 1897, and February 17, 1897; "Journal of Physiology," vol. xx, p. 474.

Kuh [3] reports two cases, both of which recovered. The first was treated with **Desiccated Thyroids,** and continues their use up to the present time, though he has had no symptoms of the disease for four years. In the second case, **Iodothyrin** was used, and this seemed to have less disagreeable secondary effects than the powdered gland. He, too, continues the drug and has had no recurrence of the disease. The author believes the best results are to be obtained by very gradually increasing the dose until the first symptoms of intoxication appeared. In the second case reported, the dose was increased until the pulse became normally frequent, when the dose was slightly reduced. In the first case in which the tablets were used, gastro-intestinal disturbance, diarrhœa, gastric distress, anorexia, and increased frequency of the pulse were the chief toxic symptoms. The dosage was thereupon reduced. The best results cannot be obtained by small doses, but by remaining just below the toxic stage, until the symptoms disappear. Unless the patients can be watched closely, they should be kept in bed while full doses are being given.

REFERENCES.—[1] "Med. Rec.," Oct. 21, 1899; [2] "Journ. of Nervous and Mental Dis.," Nov., 1899; [3] "Ibid., Sept., 1899.

NAILS (Disorders of). *T. Colcott Fox, M.B.*

Diseased conditions of the nails have comparatively few modes of expression, so that their study has always been surrounded by special difficulties, and indeed to many people they always remain a puzzle. The first requisite for a right comprehension of them is a sound knowledge of the anatomy and development of the nail.

Mr. Jonathan Hutchinson [1] introduced a discussion on diseased conditions of the nails, but, as he himself confessed, in a fragmentary way, and but little light was thrown on their significance or pathogeny.

Symmetrical transverse furrows arise from a temporary arrest of nutrition occurring during some disturbance of health, from sea-sickness onwards. Mr. Hutchinson thinks that a certain thickness of the nail is necessary, and that these furrows are most marked in the thumb nails, and in decreasing proportion to the little fingers. Sometimes a *white line*, the mechanism of which the author does not explain, replaces the furrow. Longitudinal striation and reediness were not mentioned. Again, he has seen in a hemiplegic patient a stripe of hæmorrhage occupying the place of the furrow.

A disturbance of nutrition acting on the root of the nail may produce, in some unexplained way, a *vertical ridge*, which is apt

to split into a Y towards the free end. This condition is unaffected by drugs.

A third condition, seen in syphilitics, but not syphilitic, is a breaking up and off of the nail, so that the soft nail-bed becomes exposed and drier, and the nail-fold is drawn forward on to the nail-bed in the shape of a fan, like a pterygium of the conjunctiva. In this way all the nails may be lost.

Mr. Hutchinson did not refer to other atrophic conditions, such as the thinning and spooning of the nails.

With regard to the condition of the nail commonly denominated *psoriasis*, the author finds that, where the nail is diseased in association with typical psoriasis elsewhere, there is an inflammation of the nail-bed with accumulation of scales, which loosens the nail from its bed. This loosening begins usually at the free end, or sometimes at the sides, or now and then by a separate spot in the more central parts. The reporter would add that little cups, from pin-pricks upwards, are not uncommon, and other deformities may arise from a patch of psoriasis involving the nail-fold. Mr. Hutchinson then advances the proposition that a great many cases of psoriasis occur as psoriasis of the nails without any psoriasis of the body, though possibly some relative may have the general skin eruption. Against the view that this uplifting of the nail by an accumulation of epidermis is pathognomonic of psoriasis, it might be argued that psoriasis localised to a limited region such as the palm or scalp is very uncommon.

In eczema there is generally a longitudinal furrowing of the nails, or the development of little indentations as if the nail were pin-pricked. "Irregularity of the surface of the nail beginning at the root is typical of all eczematous conditions ; loosening of the nail beginning at its free edge is characteristic of psoriasis conditions." Then Mr. Hutchinson makes the surprising remark that in the majority of cases the conditions are mixed up. We cannot accept this statement. The alterations of the nail met with in eczema, as in psoriasis, will depend on the implication of the nail-fold or nail-bed.

After the demonstration of a drawing of a *large lunula* and the *enlargement of nails* in club fingers, and the false form of acromegaly associated with thoracic disease, Mr. Hutchinson added some words on syphilitic nail diseases. He said they were of infinite variety and great simulators of other nail affections.

Lastly, *pustular inflammation of the nail-bed*, which occurs chiefly in children, and affects one digit as a rule, was noted, and the difficulty of establishing the negative in cases of supposed ringworm of the nails was mentioned.

The reporter is inclined to agree with Dr. Radcliffe Crocker that microbic invasion plays a very important part in nail diseases. Those interested in nail diseases may consult with advantage Schwimmer's article in Eulenburg's "Real Encyclopedia," vol. xvi.

REFERENCE.—[1] "Brit. Journ. Derm.," Aug., 1899.

NASAL ACCESSORY SINUSITIS. (See "Sinusitis.")

NEURALGIA (Trigeminal). *J. E. Platt, M.S., F.R.C.S.*

Keen[1] gives an account of eleven cases in which he has removed the Gasserian ganglion. Although the operation is a difficult one, and by no means free from danger, he considers that the procedure is perfectly justifiable, as a last resort, in cases which have resisted all other forms of treatment, and in which operations upon the peripheral parts of the nerve have failed to give relief. Three of the patients died as the direct result of the operation; of the remainder, all but two were cured of the pain. In the two unsuccessful cases, Keen thinks that the removal of the ganglion was incomplete. He therefore advises that no attempt be made to save any part of the ganglion or the motor root. He recommends the Hartley-Krause method of performing the operation, and details a special method by which subsequent inflammation and sloughing of the eyeball (one of the chief dangers) can be prevented.

Rose,[2] on the other hand, says that during the past few years he has had so great success after excision of large portions of the superior and inferior maxillary divisions of the fifth nerve, that he now performs these operations in cases where he would formerly have removed the Gasserian ganglion. The latter operation is both more difficult and more dangerous, whilst the results are no better than with the former. In well-established cases of tic, all minor operations on peripheral branches of the nerve are useless, and, moreover, simple section of the main divisions of the nerve gives only the most transient relief, since union of the divided ends rapidly takes place. If the operation is to be of any use, considerable portions of the main divisions of the nerve must be removed, a procedure which, in Rose's hands, has given most excellent results.

REFERENCES.—[1] "Amer. Journ. Med. Sci.," Nov., 1898; [2] "Practitioner," March, 1899.

NEURASTHENIA. *Graeme M. Hammond, M.D., New York.*

Zenner,[1] in speaking of the treatment of this disease, says the first object is to remove influences which are factors in the causation, such as alcohol, narcotics, tea and coffee taken in large quantities, excesses of all kinds, overwork, worry, digestive disturbances, etc. The next

thing is to secure adequate rest. In some cases lying in bed until after breakfast, going to bed early at night, or doing only a part of the ordinary work will suffice; but in others, the profound nervous exhaustion may demand complete rest in bed and the Weir-Mitchell treatment. This method is especially necessary in cases which are due to anæmia and poor nutrition. The benefit of exercise must also be considered, and its possible harm be kept in mind. Exercise must never be carried to the extent of causing fatigue. The use of the bicycle and other out-door sports in moderation are beneficial. An important part of the treatment is the elimination of waste matters from the bowels, skin, and kidneys. In this way, auto-intoxication may be lessened, and, at any rate, normal metabolism is favoured. An increase in the quantity of water consumed, and a course of laxatives are useful measures. The diet should be nutritious and digestible. Meat, vegetables, fruit, milk, and eggs are best for most cases; tea, coffee, and tobacco may be used moderately, but alcohol should be strictly forbidden. As to drug treatment, the **Bromides** and **Hypnotics** are often very serviceable, but should be used as little as possible. **Hydrotherapy, Electricity,** and **Massage** are beneficial. The cold sponge-bath taken at night may favour sleep, and so will hot abdominal compresses, the wet pack, the hot or warm bath, the spinal bath, and the needle bath.

REFERENCE.—[1] "Treatment," Aug. 11, 1898.

NEURITIS. (See also "Multiple Neuritis.")

Synopsis.—(Vol. 1898, p. 391). **Rest** in bed. **Anodynes** to relieve pain. **Morphia** or **Codeine** or **Cinchonidin Salicylate**. Later, **Potassium Iodide** and **Mercuric Chloride** in small doses are useful. If pain is in a limb, apply firm **Pressure** with a flannel bandage. **Blisters** over painful nerve trunks. **Hot Baths** and **Packs** are useful.

NEW-BORN. (See under "Labour.")

NIGHT SWEATS.

Synopsis.—(Vol. 1898, p. 391). **Camphoric Acid**, gr. 30, in cachet at night two or three hours before the sweating. **Tellurate of Sodium**, $\frac{1}{3}$ to 1 gr. per diem. **Acetate of Lead**, $1\frac{1}{2}$ grs. daily. In some tubercular cases **Pilocarpine**, $\frac{1}{60}$ to $\frac{1}{30}$ gr. **Sulphonal**, 15 to 30 grs. at night. **Strychnine** in the usual doses.

NIGHT-TERRORS IN CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. Rey[1] reports thirty-two cases of night-terrors, in all of which adenoids were found in the naso-pharyngeal vault. Upon removal of the adenoids the night-terrors subsided. The author believes that adenoids are the most frequent cause of this trouble, producing a carbonic acid poisoning through interference with respiration.

REFERENCE.—[1] "Archiv. f. Kinderh.," B. xxv, H. iii, iv.

NIPPLE (Fissure of). (See also "Breast.") *T. Colcott Fox, M.B.*

Maygrier and Blondel[1] report favourably on the use of **Orthoform** for cracked nipples. Cocaine has the drawbacks, first, of being apt to produce toxic effects; secondly, of exerting a tendency to suppression of the milk secretion. Orthoform is a powerful local anæsthetic, belonging to the same chemical family as cocaine, whose action is more enduring—lasting, on an average, twelve hours. It has no effect, however, when applied to the unbroken skin; and it must be kept continuously applied to the wounded surface. A slight burning sensation is felt for a few seconds when first applied. Orthoform has the further advantage of being antiseptic, so that it does not require sterilising before use.

The best plan is to apply a few drops of a saturated solution of orthoform in 80 per cent. alcohol; a dry compress is then placed over it. The analgesia is effected much more quickly, the burning sensation is less and of shorter duration, and to the beneficial action of the orthoform is added that of the alcohol. Cicatrisation was generally complete in four to five days, without any interference with suckling; by other methods cicatrisation takes ten to twelve days, even when nursing is suspended.

Dombrovsky[2] recommends painting the nipples several times a day with a solution of the strength of from 2 to 5 per cent. of **Potassium Permanganate.**

The "British Medical Journal" thus epitomises a plan of treatment which Mabbatt[3] has found highly efficacious, on the principle that prevention is better than cure. "It is the use of **Lanolin** and a **Nail-brush**. Every night at bedtime, beginning four to six weeks before the expected confinement, a small portion of lanolin is thoroughly worked into each nipple with thumb and fingers, special pains being taken to work it into any folds or creases, especially in the case of depressed nipples. The kneading process has the effect of forming the nipple. The second and more important part of the treatment consists in the use of a solt nail-brush every morning to remove the lanolin. The nipple should be brushed with lukewarm water and any mild pure soap, giving it a perfect lathering for three or four minutes; it should then be rinsed in fresh water and dried. The effect is to remove every detachable fragment of epithelium together with any little crusts of dried secretion which may have accumulated and which, unless removed, act as a protection to the surface of the nipple and keep it tender and delicate. It is claimed that this treatment will almost guarantee against subsequent abrasions and tenderness.

REFERENCES.—[1] "Bull. et Mém. de la Soc. Obs. et Gyn. de Paris," Nov. 10, 1898, epitomised in "Brit. Med. Journ."; [2] "Sem. méd."; "Nord méd.," Oct. 16; [3] "New York Med. Journ.," Sept. 10, 1898.

NOSE (Diseases of). *W. Milligan, M.D.*

Adenoids.—The importance of adenoid vegetations as a causative factor in the production of *Laryngeal stridor* was pointed out some years ago by Eustace Smith.[1] Since then attention has been paid to this subject, and cases have been recorded where attacks of stridor often dangerous and persistent have entirely disappeared after free curetting of the naso-pharyngeal mucosa.

Shardlow[2] records another striking result following adenoidectomy in the case of a child aged eight months, who suffered from frequently repeated stridulous attacks.

Secondary Hæmorrhage following Adenoidectomy.—Prable[3] records a fatal case due to secondary hæmorrhage. Seven days after operation a sudden hæmorrhage occurred which was controlled by cold syringing. On the eight day, however, it recurred and proved fatal. There was no history of hæmophilia. He has collected twenty-one cases of serious primary hæmorrhage after operation, and five cases of secondary hæmorrhage of which four proved fatal.

Anæsthetics in Adenoidectomy.—The controversy which has waged during recent years as to whether adenoids should be removed without a general anæsthetic or with one, and in the latter case with which anæsthetic has again been raised by Stawell. In the course of an address before the Medical Society of Victoria he remarks: "As a matter of fact at the Children's hospital we have never had a death under chloroform when given for post-nasal adenoids, although there have been in the hands of inexperienced anæsthetists a few anxious cases of partial asphyxiation. On looking up the records I have estimated that within the past twelve months six hundred and fifty cases of post-nasal adenoids have been operated upon under chloroform, and it may be said that during the past five years at least three thousand have been dealt with in a similar way, that is, under practically complete anæsthesia without any mortality."

He maintains that as soon as very partial general anæsthesia is produced in a child with adenoids, buccal respiration ceases and air enters with difficulty. Complete anæsthesia rapidly ensues, the tongue falling backwards, and a dangerous condition is at once produced. Danger can however be avoided by inserting a gag and allowing a free ingress of air as soon as the child has become quiet from the chloroform.

Atrophic Rhinitis (*Ozæna*).—In the treatment of this peculiarly in-

tractable condition, one of the main essentials is the maintenance of as strict cleanliness as possible. For this purpose various alkaline and antiseptic lotions have been advocated from time to time. Richards[4] speaks highly of the value of **Formaldehyde.** After a preliminary cleansing, a solution of formaldehyde (5 to 10 drops of the 40 per cent. solution in 8 ounces of warm water), is injected or sprayed along the nasal passages. It is claimed that with this treatment crusts diminish in number, fœtor ceases and cicatrisation is promoted.

Moure[5] recommends the employment of **Intra-nasal Massage** and after a thorough cleansing the application of a powder containing from 5 to 25 per cent. of **Silver Nitrate**

The use of **Antidiphtheritic Serum** has been advocated by many observers. Thus Holger Mygind[6] claims good results from its subcutaneous injection. For an adult a suitable dose is 10 c.c., and for a child 5 c.c. repeated every eight to twelve days. The action of the remedy begins at the end of the first twenty-four hours, the patients discharging the crusts with much greater freedom, and the crusts themselves being mixed with a mucous or muco-purulent secretion. The main drawback to this method of treatment appears to be the painful swelling of the skin around the site of the injection, and the different forms of skin eruptions and joint affections which occasionally are observed. This method of treatment is also endorsed by Cathelin,[7] Braden Kyle and King.[8] The experience of these last named observers appears to coincide with Holger Mygind's, viz., that the effective agent is the serum and not the toxins, acting apparently as it does upon the nervous system and stimulating the powers of resistance.

Bi-polar Electrolysis strongly advocated by Réthi has been practised by many observers, and with comparatively good results.

MacBride[9] remarks that cupric electrolysis is perhaps the most valuable therapeutic agency as yet suggested for the treatment of ozæna. In a series of cases in which he has tried this plan of procedure he has had excellent results. The strength of the current employed by him varied from 3 to 10 milliampères. After cleansing the nasal passages, and after cocainising the mucosa, the copper needle (attached to the positive pole) was inserted into the inferior or the middle turbinated body, and the platinum needle (attached to the negative pole) into the septum. Each sitting lasted usually for ten minutes and no after-effects of any importance were, as a rule, complained of. The *rationale* of the treatment is not as yet very certain, but probably the formation of copper salts at the positive pole

has as much effect in producing the good results already reported as has the electric current itself.

The employment of the nasal douche is condemned by Lichtwitz,[10] except in cases of atrophic rhinitis, where its employment is essential, on account of the danger of producing suppurative middle ear disease.

Fibrinous Rhinitis.—The practical difficulties which are encountered at times in the differential diagnosis of fibrinous rhinitis and diphtheria are frequently very considerable. According to Middlemas Hunt[11] the diagnosis must rest, not upon clinical characteristics alone, but must be made after a microscopic and bacteriological examination of portions of membrane. He summarises his views as follows: (1,) While admitting that other bacteria besides the Loeffler bacillus may give rise to membranous exudation in the nasal passages, the vast majority of cases of fibrinous rhinitis are due to the Loeffler bacillus; (2,) It is impossible upon clinical grounds alone to distinguish fibrinous rhinitis from mild nasal diphtheria; (3,) All cases of fibrinous rhinitis should be regarded as diphtheria until the contrary has been proved by reliable bacteriological investigation.

H. L. Lack[12] has arrived at the conclusion that fibrinous rhinitis is a variety of diphtheria, the differences in the clinical manifestations depending upon differences in the organisms associated with the Klebs-Loeffler bacillus.

Hypertrophic Rhinitis.—Hamm[13] recommends the submucous injection of ½ a gramme of a 10 per cent. solution of **Chloride of Zinc**, and claims by this method complete cure.

Intranasal Malignant Disease.—In the diagnosis of malignant disease within the nose, two features stand out prominently as important symptoms, viz., hæmorrhage and the locality of the growth. Of the two the former is probably the more important, is frequently spontaneous, and usually occurs at quite an early period of the disease. Intranasal sarcomata may occur at almost any age, cases having been recorded in quite young children and in elderly men. Carcinomatous growths upon the other hand are usually met with amongst patients who have passed middle life. The prognosis of intranasal malignant disease depends largely upon the degree of malignancy exhibited and upon the locality of the growth. Hunter Mackenzie[14] believes the prognosis to be highly unfavourable in carcinomatous growths, and more favourable in sarcomata, especially fibro-sarcomata, many of which may be successfully eradicated, the chances being greater when the growth arises from the septum than when arising from the ethmoidal recesses. Benign and malignant polypi may occur in the same nostril and at the same time. Many competent authorities hold

the opinion that malignant degeneration of an originally benign growth may be induced by (surgical) traumatism.

Nasal Hydrorrhœa.—The subject of watery discharge from the interior of the nose has of late been very carefully worked up by St. Clair Thomson [15] who points out that the term nasal hydrorrhœa should be used to designate not a disease but merely a symptom of a disease. Nasal hydrorrhœa implies the presence of a secretion poured out from the nasal mucosa without any visible pathological changes, without evident causes of irritation, and which chemically has the following analysis (Halliburton) :—

Water	98·792	per 100
Total Solids	1·208	
Proteids (including mucin)	0·260	
Other Organic Substances	0·163	
Inorganic	0·785	

The presence of mucin and the absence of reducing substances as well as the percentage of proteids and solids, are quite sufficient to distinguish this fluid from normal cerebro-spinal fluid. In conjunction with Prof. Halliburton the author has drawn up the following tests for the detection of cerebro-spinal rhinorrhœa so that no difficulty should arise in determining the source of the flow :—

(1,) The fluid is perfectly transparent like water, and contains no sediment.

(2,) It is faintly alkaline in reaction, and either tasteless or slightly salt.

(3,) The specific gravity is between 1005 and 1010.

(4,) It is not viscous, and gives no precipitate (mucin) on adding acetic acid.

(5,) On boiling there is not more than a trace of coagulum of serum globulin and serum albumin.

(6,) Cold nitric acid gives a precipitate, which disappears on heating, and separates again on cooling.

(7,) Saturation with magnesium sulphate should give a precipitate. Saturation with sodium chloride should also produce a precipitate. Ammonium sulphate should be tried if the above salts fail.

(8,) The liquid should give a pink or rose-red colour with a trace of copper sulphate and excess of caustic potash.

(9,) When boiled with Fehling's solution there should be a reduction of the copper (due to pyrocatechin, or some similar body).

(10,) The reducing substance may be obtained by evaporating to dryness an alcoholic extract of the fluid. It is then found in the form of needle-like crystals.

(11,) The aqueous solution of this residue does not ferment with yeast.

The amount of fluid secreted may vary from a few ounces to as much as a pint *per diem*. Such cases of profuse watery discharge secreted by the nasal mucosa and not dependant upon intranasal or neighbouring sources of irritation, usually occur in adult life affecting both sexes indifferently. The flow, although at times unilateral, is usually bilateral, and handkerchiefs soaked with the fluid dry stiff.

In cases of nasal hydrorrhœa (defined as above) treatment must be followed out largely upon the lines usually adopted in cases of hay fever. In cases of cerebro-spinal rhinorrhœa however, the author utters a word of caution against undue interference, owing to the risk of septic infection.

Nasal Stenosis.—For the treatment of nasal stenosis due to deflection of the *septum nasi*, various operative procedures have been introduced. An operation which is much in vogue in America, and which has many adherents in this country is that introduced by Asch[1] of New York. It was referred to in the "Medical Annual" of 1897, page 407, but was not illustrated so fully as we now propose to do.

The rationale of the operation is not to cut away the deviated portion of the cartilaginous septum nor to make a perforation, but to destroy the resiliency of the cartilage in such a way that when forced back into its proper position and held so for a proper length of time the result is a straightened septum without any loss of tissue.

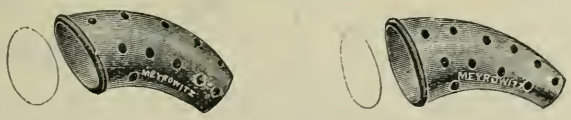

Fig. 22.

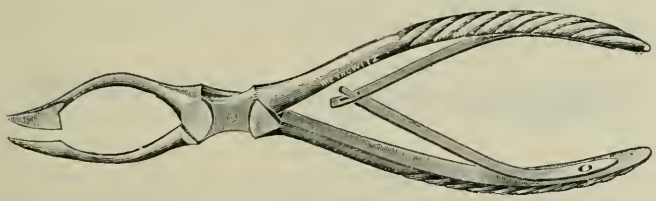

Fig. 23.

For the performance of the operation the following instruments are required, as depicted in the accompanying illustrations (*Figs.* 22, 23, 24, 25, 26), a cutting forceps, a compressing forceps, blunt and sharp

separators to break up adhesions between the convex portion of the deviated septum and the inferior turbinated body, and tubular nasal splints made of hard rubber.

Before operating, the nose should be carefully cleansed by means of some antiseptic solution. The patient is placed under complete

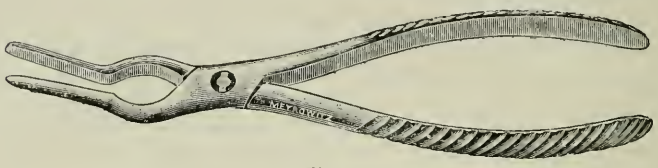

Fig. 24.

anæsthesia, and the head is drawn over the end of the table so as to prevent blood entering the larynx. The scissors (*Fig.* 23) are now introduced parallel to the floor of the nose, the sharp blade being in the concavity and the blunt one over the line of the greatest con-

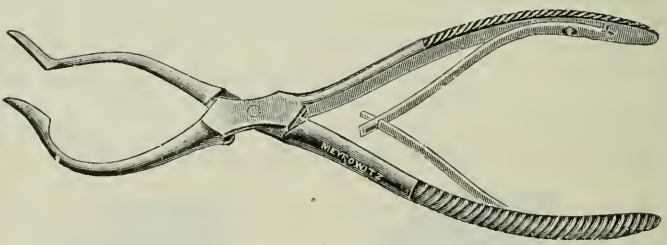

Fig. 25.

vexity of the deviation. By means of pressure the cartilage is now cut through. The scissors (*Fig.* 25) are then introduced, this time, however, with the blades pointing vertically, and so placed as to cross the line of the first incision as nearly as possible at a right angle and

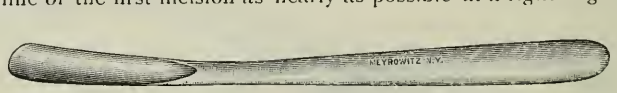

Fig. 26.

about its centre. Four segments are thus produced as a result of this crucial incision. The operator now introduces his finger into the stenosed nostril, and by forcible pressure pushes the segments into the concavity of the opposite side, effectually breaking them at their base. If the segments are properly broken by this forcible pressure

the resiliency of the cartilage is destroyed. The compressing forceps (*Fig.* 24) are now introduced in order to straighten the septum as a whole. After hæmorrhage has been stopped the splints (*Fig.* 22) are introduced, and serve to maintain the septum *in situ*. For four days the patient should be kept in bed whilst the splints are taken out each day, cleansed, and replaced by the surgeon. Usually the splints should be worn for a month, at the end of which time the septum has become sufficiently solid to maintain its new position without support.

Vertigo of Nasal Origin.—Lacroix [17] relates the case of a woman, aged thirty-eight, who suffered from severe and constant attacks of vertigo. In the right middle meatus three small polypi were found. These were easily and painlessly removed with complete relief to all her vertiginous symptoms.

Stein [18] suggests that in such cases the irritant is received at the hypersensitive station in the nose, whence an impulse passes along some branch of the fifth or of Meckel's ganglion, and by connection with branches of the sympathetic reaches the vertigo centre (if such exists).

X-Rays in the Surgery of the Nose.—Speiss [19] finds that the X-rays afford a means of obtaining evidence as to the existence and dimensions of the sinuses of the head, and of the possibility of treating these sinuses intranasally. In cases of frontal sinus disease, the author drives a trephine into the centre of the sinus controlling the direction of the instrument by means of the fluoroscope. An opening once having been made may easily be enlarged for purposes of drainage or lavage.

Post Nasal Catarrh.—Malherbe [20] considers that many cases of obstinate post nasal catarrh are found in patients who have once been the subjects of adenoid growths, that involution of the hypertrophied mass has not been complete after puberty, and has left the patient with a chronic catarrh. In such cases the remains of the old adenoid cushion is cut up by fissures and crypts which secrete a thick viscid mucus. He maintains that in such cases the essential indication is the complete removal of all crypts and glandular tissue by means of a thorough curettment. Eight days after the operation he swabs out the post nasal space with an iodine solution, and repeats this upon two or three subsequent occasions.

Local Anæsthetics.—Somers [21] after a careful trial of the relative merits of **Eucaine** *β* and **Cocaine Hydrochlorate** in intranasal surgery summarises as follows: (1,) Eucaine hydrochlorate *β* in 3 per cent. solutions produces as complete anæsthesia of the nasal mucosa as does a 4 per cent. solution of cocaine; (2,) Its action is slower than

that of the latter drug ; (3,) The anæsthesia is dissipated more rapidly than that produced by cocaine ; (4,) It is non-toxic in the strength and manner here used ; (5,) It has no apparent shrinking action on the turbinal investiture as has cocaine, it is therefore less valuable for nasal surgery than the last named drug ; (6,) It is superior to the former variety of eucaine because its toxic properties are less, it is more rapid in action, is non-irritating, and the same degree of anæsthesia may be produced by smaller amounts of the drug.

Coosenmans [22] in noting the action of **Holocaine** as a local anæsthetic in comparison with cocaine comes to the following conclusions: (1,) A 1 per cent. solution of holocaine is equivalent to a 10 to 20 per cent. solution of cocaine ; (2,) It causes no pricking ; (3,) It is much less bitter to the taste than cocaine ; (4,) It causes no nausea, no sensation of tightness or of foreign body in the throat, it produces none of the cerebral excitation which is often responsible for cocaine mania ; (5,) It causes no vascular contraction ; (6,) It never causes symptoms of general intoxication ; (7,) The solutions are stable and antiseptic.

Preparations made from the **Suprarenal Gland** of the sheep possess considerable vaso-constricting properties, and hence are of value in the performance of certain nasal operations. Their tendency to putrefaction, however, makes it advisable to add some antiseptic such as carbolic acid, boracic acid, etc., but these antiseptics have unfortunately the property of somewhat affecting the hæmostatic action of the gland.

Lederman [23] advises the employment of **Glycerin Watery Solutions** made as follows : About 10 grains of the gland (Armour's) is employed to the drachm of a 25 per cent. glycerin watery solution ; ½ an ounce or 1 ounce of this mixture is placed in a wide-mouthed bottle, and well shaken ; it is then allowed to stand in a room at a temperature of 68° F. for forty-eight hours, during which time the bottle is occasionally shaken ; after which the solution is duly filtered. An amber-coloured solution is the result, which if kept in a cool atmosphere will remain clear for some time.

REFERENCES.—[1] "Lancet," May 25, 1895 ; Ibid., March 19, 1898 ; [2] Ibid., Aug. 27, 1898 ; [3] "Boston Med. and Surg. Journ.," May 19, 1898 ; [4] "Laryngoscope," May, 1898 ; [5] "Deut. med. Woch.," April 7, 1898 ; [6] "Journ. of Laryng.," Aug., 1898 ; [7] "Amer. Journ. Med. Sci.," Feb., 1899 ; [8] "Internat. Med. Mag.," March, 1899 ; [9] "Edin. Med. Journ.," March, 1899 ; [10] "Ann. des malad. de l'or.," March, 1898 ; [11] "Brit. Med. Journ.," July 9, 1898 ; [12] Ibid., Oct. 12, 1898 ; [13] "Journ of Laryng.," May, 1899 ; [14] "Monatschr. für Ohrenheil., Sept., 1898 ; [15] "Brit. Med. Journ.," Oct. 22, 1898 ; [16] "Laryngoscope," June, 1899 ; [17] "Archiv. Inter. de Laryng.," Sept., 1898 ; [18] "Chicago Med.

Record," Nov. 10, 1898 ; [19] "Rev. de Rhinol. et Laryng.," No. 5, 1898 ; [20] "Archiv. Inter. de Laryng.," 1898 ; [21] "Therap. Gaz.," Jan., 1899 ; [22] "Rev. hebd. de Laryngol.," Dec. 11, 1897 ; [23] "Laryngoscope," April, 1899.

ŒDEMA (of Lungs).

Synopsis.—(Vol. 1899, p. 418). **Venesection** or **Cupping** over hepatic or lumbar region. For heart failure, hypodermic injection of **Caffeine** or **Camphorated Oil**, *e.g.*, R. Sterilised Olive Oil, ℥jss; Camphor, ℥ijss. Inject 3 or 4 hypodermic syringefuls per day. Injection of **Ether** or **Strychnine**. **Atropine** may answer well. Later, to produce diuresis, give full doses of **Theobromine** and an exclusively **Milk Diet**.

ŒSOPHAGUS (Obstruction of by Foreign Bodies).

Priestley Leech, M.D., F.R.C.S.

Robert Jones,[1] from a study of his own cases, submits the following conclusions : (*a*,) That bodies which have lain for some time and given rise to symptoms of irritation, obstruction, or dyspnœa, should be operated upon without delay ; (*b*,) That forcible extractions by the mouth are to be condemned ; (*c*,) That sharp or irregular impacted bodies especially demand œsophagotomy : (*d*,) That in certain cases gastrotomy is indicated, and in some a combination of gastrotomy and œsophagotomy : (*e*,) That where the wound in the œsophagus is jagged, or its walls inflamed, no stitches should be used ; (*f*,) That the routine practice where the œsophageal wound is clean cut is to stitch it up with a continuous suture—care being taken, as in the case of the intestine, not to pierce the mucous coat : (*g*,) That only in very exceptional cases, where no danger of suppuration and infection exists, should the external wound be closed ; (*h*,) That liquid food may be given by the mouth in about twenty-four hours after operation.

Fargue[2] operated by posterior thoracotomy on a child who had three months previously swallowed a sou piece. The radiograph showed the coin fixed in the fourth intercostal space to the right of the shadow cast by the vertebral column ; for this reason Fargue practised a right instead of a left posterior thoracotomy. The coin could be felt by the tips of the fingers. The effort to strip the parietal pleura by following its mediastinal reflection, and thus separating it from the right border of the œsophagus, was unsuccessful ; the cellulo-fatty layer in front of the vertebral bodies and behind the œsophagus was entered, and hence the œsophagus was carried forwards out of reach. Some hæmorrhage occurred and the mediastinum was tamponed, the wound drained, and the upper part was sutured. Twelve days later the coin was extracted by an instrument introduced from the mouth in the ordinary way.

REFERENCES.—[1] "Lancet," May 6, 1899, p. 1215 ; [2] "Rev. de thérap. médico-chir.," Nov. 15, 1898.

OPHTHALMIA OF INFANTS. (See under "Labour.")

ORCHITIS.

Synopsis—(Vol 1898, p. 52). Salicylic Acid or Salicylates for cases following blennorrhagia.

OZÆNA. (See also "Nose.")

Synopsis.—(Vol. 1898, p. 399). Removal of all crusts by Medicated Douche followed by freely laying with Vaseline mixed with Resorcin dissolved in Glycerin or Vaseline with 10 drops of Campho-Menthol and 5 of Eucalyptol to the ounce. When crusts cease to form apply Trichloracetie Acid 1 to 5%, Vaseline and Resorcin being used as protective medium. Porcher plugged between superior turbinate and roof with ℞ Pot. Iod., ʒijss; Iodine, gr. xl; Glycerin, ʒj. Antitoxin results are poor. Seiss upholds Massage treatment by probe sheathed in wool, and also use of Faradic Current, + pole in nose and − pole on neck. Armstrong uses the following through oil atomiser: ℞ Powdered Thiol, gr. x; Menthol, gr. v; Liquid Blancolin, ʒj. Carpart uses Electrolysis, and Ertler applies Ichthyol, washing crusts out with 2 to 5% solution, and then using 25 to 30% for swabbing. Mouret gives Alkalies, especially Soda Bicarb. internally.

PANCREAS (Cysts of). *Priestley Leech, M.D., F.R.C.S.*

Pollard[1] reports three cases of this condition. The first was operated on five years ago, and the last two years ago. All were treated by drainage through an anterior abdominal incision. In none of the cases was there any history of injury. In two the onset of the illness was marked by severe epigastric pain and vomiting, and in the other case there was a sudden severe pain in the left hypochondrium. There was no sugar in the urine, but in two there was an occasional trace of albumin; two had lost a lot of flesh; the stools were natural and there was no excess of undigested fat. The three cases presented very similar clinical symptoms. In each there was a large tumour occupying the epigastric and left hypochondriac regions and portions of the umbilical and left lumbar regions; the tumours moved very little on respiration, but could be moved slightly from before backwards and from side to side by the hands. In two cases stomach resonance could be obtained by light percussion in the epigastric region, although the tumours seemed to fill that region. In one the percussion note was dull over the most prominent part of the tumour in the epigastric region, although at the operation this part of the tumour was found covered by the stomach. They could not be made to fill the loin as a hydronephrotic kidney could.

Langton[2] reports a case on which he operated successfully, but three years afterwards the patient died, and it was found that the scar tissue had entangled the portal vein so that there was practically no circulation through the hepatic area.

REFERENCES.—[1] "Brit. Med. Journ.," March 11, 1899, p. 594; [2] Ibid., March 18, 1899, p. 664.

PARAPLEGIA. (See "Spine and Spinal Cord.")

PELLAGRA (in Egypt). *James Cantlie, F.R.C.S.*

Dr. Sandwith,[1] in 1893, became aware that a large number of ankylostomiasis patients showed a symmetrical eruption which sunburn, chapping and dirt could not explain. Dr. Sandwith proved the cases to be pellagra, and has had more than five hundred cases under his treatment. The early symptoms are constipation, thirst, and abdominal pains. Headache, vertigo, pains in the back, and anæmia follow, and a skin eruption develops. The eruption begins as an erythema, resembling severe sunburn on exposed parts of the body. The erythematous patches desquamate, the roughened surface becoming coated with dirt and excretion. Year after year the erythema returns, and in time an atrophied condition obtains. The nervous symptoms consist of changes in the reflexes, and pain or tenderness in the dorsal region of the body. In Italy 10 per cent. of those afflicted became lunatic. The essential cause of pellagra in Egypt, as in Italy, is bad maize, poverty, and exposure. As every individual is an early case of ankylostomiasis, **Thymol** must be administered, and afterwards a general **Tonic Treatment** with good food must be followed.

REFERENCES.—[1] "Brit. Med. Journ.," Sept. 24, 1898, and "Journ. Trop. Med.," Oct., 1898.

PEMPHIGUS. *T. Colcott Fox, M.B.*

The only way in which we shall disentangle the heterogeneous collection of bullous eruptions grouped under the name pemphigus, is by a careful investigation of each case by modern methods, especially with reference to the bacteriology.

In a girl under the care of Buxton Shillitoe,[1] the eruption continued by successive outbursts or relapses from January 1st to June 1st. Arsenic seemed to be without effect. Bullock found in the clear bullæ a diplococcus agreeing in almost every particular with that found by Demme and others in cases of pemphigus, and by Bullock in acute pemphigus. In a late relapse, streptococci and staphylococci were found. The girl suffered from superficial whitlows a a month before the appearance of the rash.

Walter Hadley and William Bullock[2] add another to the carefully observed cases of acute pemphigus occurring in butchers, in which a peculiar diplococcus was found. Previously, Pernet and Bullock had collected eight cases occurring in butchers, and following a lesion usually of the fingers and hand. The absence of the diplococcus from the internal organs would seem to show that the disease is to a large extent a toxic one, the toxin being probably bacterio-genetic.

Luethlen,[3] writing on contagious *Pemphigus neonatorum*, says the organism present is indistinguishable from the staphylococcus pyogenes aureus, and always produces a vesicle when inoculated on the skin. Curiously enough, the author recommends baths to be avoided. The principles of treatment recommended by P. Munz[4] appear more satisfactory. He recommends to give newly-born children suffering from pemphigus, twice daily, or in case of weakliness once a day, or even every other day, a bath of 90° F., to which an astringent or disinfectant has been added. In this bath the infant has to remain for from five to ten minutes. Saltmann recommends the addition to the bath of a decoction of 1 pound of oak bark in 1 gallon of water. Simpler is the addition of 1 ounce of tannic acid to the bath. If a disinfectant is required, which appears most desirable, the author recommends the addition of potassium permanganate in such a quantity that the bath water acquires a light purple colour. Many other disinfectants will suggest themselves.

Before the child is put into the bath the larger pemphigus blebs should be carefully emptied by pricking them with a needle, and the pustular contents removed with a mop of absorbent cotton-wool dipped into 2 per cent. boric acid solution.

After the bath the skin must be carefully dried (avoiding friction), and dusted over with a dusting-powder composed of 2 parts of airol and 10 parts of amylum.

Another phase of bullous disease, which also goes by the name of *Pemphigus contagiosus*, occurs in Japan and China. Gordon Munro[5] thus describes it: "Pemphigus contagiosus is characterised by the occurrence of one or more bullæ, appearing simultaneously or in succession, and spreading by contagion from one part of the skin to another, or from person to person. Each bulla is preceded by a spot of hyperæmia which marks the site of the coming vesicle, and spreads with the development of the latter as a thin areola, or surrounding circle, sometimes not very evident. This spot of hyperæmia is usually the seat of a slight, rarely severe, itching, burning, or stinging sensation, which decreases with the advent of the vesicle, although it may return at a later stage, when the collapse of the vesicle brings the superficial and deep layers of the epidermis into contact. Each vesicle or bulla contains a clear fluid with a few cells from the stratum granulosum, leucocytes, and a micrococcus, which is believed to be the specific cause. Yokura succeeded in inoculating a patient already infected with the disease, and in making pure cultures from the lesion. Munro says that the bullæ may reach the size of an inch or more without breaking, but usually they become flaccid

when from a fourth to three-fourths of an inch in diameter, and. the contents escaping, a weeping red surface is left under the cuticle, which frequently continues to exfoliate.

"The treatment is mainly local. Washing the surrounding skin with corrosive sublimate soap, sublimate or ichthyol compresses, and the use of an ointment of white precipitate and naphthol, with a dusting-powder of dermatol and borax in infants, usually ends the disease in a week or ten days, but tonics are often required, and particularly if a relapse takes place. Of these, the hydrochlorates of arsenic and quinine, with perchloride of iron, are the best."

Menzel[6] has a long review on pemphigus of mucous membranes, with a copious bibliography.

REFERENCES.—[1]"Lancet," Nov. 26, 1898; [2]Ibid., May 6, 1899; [3]"Wien klin. Woch.," Jan. 26, 1899; [4]"Der. kinderarzt," Feb., 1899, quoted by "Treatment"; [5]"Brit. Med. Journ.," April 29, 1899; [6]"Centralb. f. Greuzgebiete der med. u. Chir.," March, 1899.

PERITONITIS. *Priestley Leech, M.D., F.R.C.S.*

Van Arsdale[1] reports three cases of peritonitis with symptoms of intestinal obstruction where, in addition to other measures, an intestinal fistula was made in order to relieve the distension; the three cases recovered, and he suggests this treatment in cases of peritonitis complicated with intestinal paralysis. The opening into the large or small intestine for the formation of an artificial anus should be made longitudinally in the coat of the bowel, as this greatly facilitates their spontaneous closure.

Symonds[2] has an interesting address on the individual value of symptoms in perforative peritonitis—more especially as regards operation. He points out that in acute abdominal trouble errors may occur if we rely upon the initial symptoms, especially pain. Two cases of acute basic pneumonia are quoted, which presented within the first few hours all the signs of perforation of the stomach and suppurating gall bladder. Pain localised to the right iliac fossa is of undoubted value; when it is continuous and independent of handling it is a sign of great value and an important indication for operation; and pain recurring after the period of repose is always a grave sign and an important indication for operation. As regards abdominal distension, he says its early appearance and continuous presence point rather to perforation than to intestinal obstruction: (1,) Distension is absent in the early stages when there is rigidity only; (2,) In all cases the general distension, which does not yield to a tube or turpentine enemata on the second or third day, indicates progressive disease, and the case will probably require operation; (3,) When a perforating

gastric ulcer is suspected, there may be no distension for twelve to twenty-four hours, at which period it is a serious symptom; (4,) In appendix cases general distension without localised tumour, without dulness, but with pain and tenderness, has a grave significance. Of all the symptoms the vomiting may be most relied on as a single one. It is more persistent in strangulation than in perforative peritonitis; if it recurs after careful feeding, rest, and a sedative, it becomes an alarming symptom, and as a rule the case demands immediate surgical interference. On the other hand, its absence is an important sign; if the patient has been carefully treated and little or no food given vomiting may be absent, but the patient may be at the same time in a very dangerous state. Temperature and pulse may steadily fall, while dangerous septic processes are advancing; a high and continuous temperature indicates a septic process in the connective tissue of the appendix. The best plan in these acute cases is to see the patient every three or four hours; if pain is great give a single dose of **Morphia Hypodermically,** or **Opium by the Mouth;** do not give opium continuously, as it masks the symptoms. As regards operation, he is in favour of early operation, though one may not infrequently open an abdomen to find everything healthy and the diagnosis wrong.

Maylard[3] advocates the use of an incision in distended small intestine, either in acute obstruction or in acute peritonitis, in order to relieve distension and to remove the poisonous contents of the bowel. In acute obstruction he incises the bowel before seeking for the cause of obstruction, and he squeezes out the contents of the intestine through the evacuatory incision; although this involves a good deal of handling of the intestine he does not think it has done any harm. In cases of peritonitis much good seems to follow the insertion of a solution of **Magnesium** (about 1 oz. in solution) through the evacuatory incision prior to closing it.

REFERENCES.—[1] "Ann. Surg.," Jan., 1899; [2] "Brit. Med. Journ.," March 4, 1899, p. 507; [3] Ibid., April 8, 1899, p. 842.

PERITONITIS (Gonococcal). *C. F. Marshall, M.D., B.Sc., F.R.C.S.*

Cushing[1] gives an account of two cases of general peritonitis, in both of which he succeeded in finding the gonococcus in the fluid and in cultivating it. From these cases he concludes that the existence of a general peritonitis, due to the gonococcus, is established. Both cases occurred in women, and cover-slip examinations of the fluid were made during the laparotomy which was performed in each case. From the ends of the Fallopian tubes gonorrhœal pus could be squeezed. In each case the general symptoms pointed rather to appendicitis with perforation. The examination of vaginal or urethral

discharge was negative. In each case the peritonitis occurred during menstruation following exposure to infection. The peritonitis was fibrinous, and involved the whole peritoneum in each case.

The author's conclusions are as follows : (1,) The gonococcus is capable of causing a specific infectious disease, viz., gonorrhœa and, at the same time, other less specific pathological conditions; (2,) There is experimental proof that in certain small animals the gonococcus can set up alterations in the peritoneum homologous with the acute septic inflammations of serous membranes in man, but differing from these in their tendency to rapid and spontaneous healing ; (3,) Hitherto conclusive proof has been wanting that in the peritonitis attendant on gonorrhœa in women, the gonococcus was solely or chiefly concerned. The inflammations were regarded as mixed infections and chemical inflammations ; (4,) The cases reported above bring for the first time convincing evidence of a diffuse peritonitis caused by the gonococcus ; (5,) It has been recognised that extension of the gonorrhœal infection from the genital organs to the peritoneum may occur in the puerpural state : a similar sequel is shown to be possible during menstruation ; (6.) Such ascending forms of gonorrhœa, under ordinary circumstances, remain localised in the pelvis, and rarely require *surgical intervention* in the acute stage ; (7,) A general infection of the peritoneum, such as occurred in the two above cases, must either be rare or unrecognised, and may depend on some specially receptive condition of the serosa or virulence of the organism ; (8.) The peritoneum is not more immune than are the pericardium or endocardium to gonococcal infection, and being more exposed, suffers more commonly in females, although the relatively benign course makes it a rare condition to come under the attention of the surgeon in the acute stages.

REFERENCE.—1 "Johns Hopkins Hosp, Bull.," 1899, p. 75.

PERTUSSIS. *Henry Dwight Chapin, M.D., New York.*

Dr. F. M. Crandall[1] says that considerable relief may result from the use of the croup kettle. The addition of **Creasote** to the steam, as in the treatment of pneumonia, sometimes proves very efficacious. **Antipyrine,** all things considered, is the most effective drug he has used ; it is best administered in solution in water to which a little syrup of tolu is added, which well covers its bitter taste. The initial dose for a child one year old is 1½ grains every four hours : for a child of four years, 2 grains every three hours. The interval between the doses may be rapidly reduced to two hours. A combination of **Antipyrine** and **Bromide of Sodium** works well. **Alum** is of benefit in

cases marked by profuse secretion ; it is far cheaper than antipyrine, is easily administered, and is well tolerated. It may be given in solution with a little syrup of lemon in doses of 2 grains every three to four hours at two years. If an opiate is required, **Codeia** is one of the best forms to use. A child of two years may receive $\frac{1}{10}$ grain, to be repeated if necessary.

Dr. Marfan[2] aims to diminish the number and intensity of the paroxysms, and to prevent bronchial infection. For the former, three drugs are of value, **Belladonna, Antipyrine** and **Bromoform.** To meet the second indication the cases should be isolated from all pneumonia patients, and auto-infection prevented by treating the rhinitis and keeping the mouth and lips clean. As soon as convalescence is established, change of air will benefit the child very greatly and help to stop a persistent cough.

Dr. Ritter[3] reports observations made upon one thousand one hundred and sixty-three cases of pertussis covering a period of five years. One hundred and twenty-two unprotected children, members of the families of those affected, did not take the disease. Five children developed the disease twice, the interval between attacks not being given. The most susceptible children were those under two years of age. After the second year was passed the susceptibility diminished rapidly. The opinion that delicate children are predisposed was not borne out by the author's experience. Bodily strength appeared to exert no influence as regards the susceptibility. The sputum of one hundred and forty-seven cases was examined for the diplococcus tussis convulsivæ, and was present in every case.

Dr. Cerioli[4] treated fifteen cases of whooping-cough with **Diphtheria Antitoxin.** Although the cases were severe and complicated, the results were surprisingly good. Improvement usually took place a few hours after the injection.

Dr. Ernest Fischer[5] has used with good results a saccharated extract of thyme known as **Pertussin.** Although intended chiefly for whooping-cough, it is likewise advantageous in chronic laryngeal and bronchial catarrh and in pulmonary emphysema.

Dr. Meunier[6] reports a condition of leucocytosis in pertussis. One hundred and four blood examinations were made during the various stages of the disease and during convalescence. A constant and well-marked leucocytosis was present in every uncomplicated case, being so distinctly different in its intensity from the leucocytosis occurring in any other apyretic respiratory affection that it suggested a specific reaction to the pertussis virus. This leucocytosis may appear even before the characteristic whoop develops, reaches its

maximum during the apyretic period of the paroxysms, and then gradually diminishes, but does not cease completely until after the disappearance of the paroxysms. The average number of leucocytes found in a cubic millimètre of blood during the paroxysmal stage is 25,500, although there are frequently more than 40,000.

REFERENCES.—[1] "Internat. Clin.," vol. iii, 1898; [2] "Rev. Internat. de méd. et de Chir.," vol. ix, No. 7, 1898; [3] "Arch. f. Kinderh," B. xxi, H. v, vi, 1898; [4] "Gaz. deg. Osped.," No. 30, 1898; [5] "Deut. med. Woch.," No. 27, 1898; [6] "Arch. de méd. des enfants," vol. i, No. 4, 1898.

PHTHISIS. *Prof. H. P. Loomis, M.D., New York.*

Interest during the year seems to have centred in the treatment rather than in the etiology of phthisis, and while toxins, serums, and drugs are being tested, the one point in treatment which is steadily gaining ground is that the destruction of the bacilli and the neutralisation of their products, so far unsuccessfully attempted, from the outside by germicides and antitoxins, may be accomplished from within by the living tissues. Hygienic treatment consists in strengthening the organism to effect its own cure.

It is becoming more and more evident that constant skilled medical supervision is an essential, as well as the necessity of the patient's surrendering himself into the hands of his medical adviser, who in his turn does but little more than oblige the patient to follow the treatment that is best suited to his particular condition.

This directs attention naturally to the prominent European and American sanatoriums, as offering important and suggestive results produced by constant and skilled supervision, with most approved methods and under most hygienic surroundings. At *the International Congress on Tuberculosis*, held the past summer at Berlin, interest focused chiefly on sanatorium treatment and its results; also the necessity for *State care* of the phthisical poor was discussed with marked insistence.

Dr. William Calwell[1] describes the important features of European sanatorium treatment, viz.:—

(1,) The continuous living in the fresh air, whether sleeping, lying on verandas, or walking.

(2,) The great attention paid to nourishment.

(3,) The amount of exercise, regulated by the condition of the lung and the effect on pulse and temperature.

(4,) The healthy site of the institution in the purest air, far from human habitation.

(5,) The absence of any unnecessary furniture in the sleeping rooms or elsewhere, to catch the dust.

(6,) The continuous medical supervision.

(7,) The efforts made to harden the skin by dry rubbing, by sponging with spirits and water, and by douching.

The aim is to make the patient lead his life under the best hygienic conditions, and so Calwell thinks "hygienic treatment" is the better name, although the open air factor is the most important point.

Regarding such sanatoria, which may or may not be established, he would deplore very much the necessity of waiting for them to carry out the line of treatment indicated.

Workers[2] in the field of antitoxins have not been idle during the past year, although it must be confessed that few definite results have been attained, and but little progress has as yet rewarded the patient toil expended in attempts to produce a curative or antitoxic serum for tuberculosis. Drs. Trudeau and Baldwin state that the apparent protection against fatal tuberculin poisoning, occasionally seen in their experiments, was not necessarily due to the specific antitoxic power of the serums, as in some cases similar effects were obtained by the use of simple saline solution.

None of the serums appeared to prevent local or general reaction from small doses of tuberculin, nor to influence the temperature of tuberculous animals. They think, disappointing as some of these results may seem, the outlook for an efficient tuberculosis antitoxin is by no means a hopeless one.

Moussou,[3] of Alfort, who has made a special study of the condition under which tuberculosis is transmitted by contagion, reports the following result. He made an experiment which consisted in exposing to direct tuberculous contagion several healthy animals of different species, by placing them in the same byre with tuberculous cattle. All save one were killed, and in all were found tuberculous lesions. The length of stay of all the animals in the infected byre varied from five months to one or two years, and the author adds that dogs and fowls exposed in the same manner always remained free from tuberculosis.

Richochon[4] gives an account of an epidemic of tuberculosis in a village which had been free from the disease for fifteen years. A consumptive patient went to stay there, and this was followed by the occurrence of a series of twelve cases of grave tuberculosis.

Dr. E. R. Baldwin[5] draws attention to the scant mention in the abundant literature on the subject, of the hands of tuberculous persons as a mode of infection. To guard against this they should be constantly washed in soap and water. With regard to spitting, after a series of investigations he submits that there is urgent necessity

for a cheap, comparatively impervious and soft handkerchief that can be burned after use for this purpose.

Dr. Sabrazes,[6] of Bordeaux, points out that the researches on the effect of gastric juice upon the bacilli emphasise the necessity for the sterilisation of articles of food, seeing that Koch's bacilli are not amenable to the solvent action of the digestive fluids. He further states that the bacilli do not lose their virulence until after thirty-six hours' contact with the gastric juice.

Two points of interest have been brought forward which may prove of importance in the *diagnosis* of tuberculosis : (1.) A number of writers call attention to the clinical significance of the *agglutination of the bacilli by human blood serum.* Dubard[7] presented a communication on this subject in which he stated that the blood of tuberculous animals and men had agglutinated and immobilised for the moment Koch's bacilli, which in the majority of cases are mobile. With the exception of the guinea-pig, which when submitted to a normal regimen, presented a blood that was always inactive, the healthy man, the rabbit, the horse, and the dog presented irregularly a blood possessing the property of agglutination. There seemed to him to be a relation between the agglutinating power of the blood of a healthy animal and its relative immunity as regards tuberculosis. S. Arloing and P. Courmont[8] reported that they had continued the researches communicated in 1898, employing by preference homogeneous cultures from eight to twelve days old, in glycerated broth. In the tubes one could observe with the naked eye the production of the deposit of agglutinins, and the clarification of the liquid in a time varying from some hours to twenty-four hours. In two patients with cavities, agglutination did not take place. In twenty-six phthisical patients with advanced lesions, reaction was positive in 92 per cent, negative in 7 per cent. In twenty-two tuberculous subjects with lesions only slightly advanced, reaction was positive in 95 per cent. In non-tuberculous patients and in healthy persons the serum is generally non-agglutinative. They believe that the disease in the future may be detected by this test, and they refer to several cases which have come under their observation in which persons apparently non-tuberculous, in whom a positive reaction has occurred, have subsequently been proved to be tuberculous either clinically or *post-mortem.*

Dr. Teichmuller[9] suggests that eosinophile cells may have an important bearing on *prognosis* in phthisis. Hitherto it has been believed that these cells rarely appeared in tuberculous cases, and almost the only disease in which their presence was observed was asthma. Dr. Teichmuller has made a very extensive study of the

subject, and in some cases found eosinophile cells in the sputum some months before the appearance of tubercle bacilli. He regards the constant presence of the eosinophile cells as pointing to efforts on the part of the organism to defend itself against the bacillary infection. When the bacilli appear in the sputum, the eosinophile cells diminish and finally disappear. On the other hand, the reverse may sometimes be observed.

Dr. Hale White,[10] under the head of "Phthisis with Peculiar Cardiac Physical Signs," reports two cases of interest where the physical signs noted were those of great displacement of the heart at the right, yet at both autopsies the heart was found to be normal and not displaced. The clinical observations seem conclusive evidence of the existence during life of a considerable displacement of the heart to the right in both cases ; but it is conceivable that this displacement could not be readily demonstrated by the ordinary *post-mortem* examination. This condition has been noted by a number of other observers.

Dr. Roberto Massalongo,[11] of Verona, has published a typical case of the so-called *chronic hypertrophic osteo-arthropathy*, has reviewed preceding published cases, and has added his own views as to the

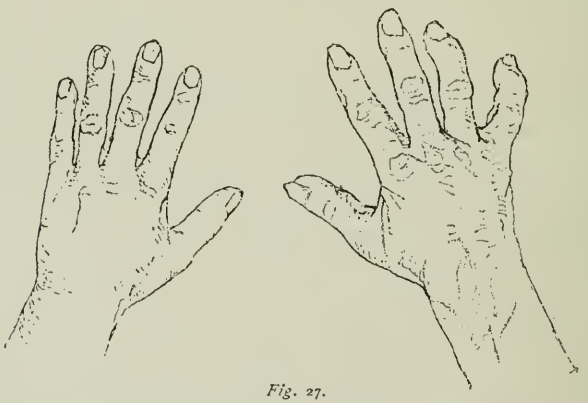

Fig. 27.

nature of this form of malady. The leading clinical features are the great enlargement of the hands and feet, and especially of the terminal phalanges, together with alterations in the nails, which are very large and spread out convexly over the pulpy finger ends *(Fig. 27)*. Marie's views were that there was a lesion of the respiratory organs producing some putrid or toxic substance, which was absorbed into

the circulation and had an elective affinity for certain parts of the bones and articulations.

Dr. Janeway[12] calls attention to the number of cases of demonstrably specific nature, condemned as being tubercular, not as a rule by physicians of little experience, but by those of well-established reputation, some being teachers and writers of medicine. He says there is danger of error in diagnosis between chronic syphilitic fever and tuberculosis.

Lounsberry[13] believes that a constant temperature elevation ranging from 99° to 101° is the most constant early symptom of incipient tuberculosis. He has thus been able to detect the tubercular element months before any positive physical signs appeared in the chest.

Value of the Tuberculin Test in the Diagnosis of Tuberculosis.—Edward O. Otis[14] summarised an article on this subject as follows: (1,) The tuberculin test indicates tuberculosis by a general reaction before it can be detected by other methods, except the X-ray, in a large majority of cases, with a dose of from 5 to 10 mgm. of Koch's original tuberculin; (2,) No injurious results occur from the use of tuberculin in these cases; (3,) Proved tuberculosis in a more or less advanced stage may fail to give the general reaction from doses of from 10 to 12 mgm.; (4,) Syphilis gives the reaction in an undetermined proportion of cases; (5,) There is a dose, undetermined, at which a non-tuberculous person may react or simulate a reaction; (6,) The reaction may be deferred from six to twenty-four hours.

As rules to be observed in making the test: (1,) Always use the same tuberculin of a standard strength; (2,) Use aseptic precautions in giving the injections; (3,) Make the injections deep into the muscles of the back, arm, or leg; (4,) Keep a two, three, or four hourly chart of the temperature, if possible, beginning twenty-four hours before the injection; (5,) Allow several days to elapse before repeating the test; (6,) In early cases depend on general reaction; in late cases, if the general health fails, carefully look for the local reaction.

TREATMENT.—With the object of treating tuberculosis of the lung on the principle of securing physiological rest for the diseased organ, Dr. Murphy,[15] of Chicago, suggests a novel proceeding. As is well known, many believe that the pleurisy which so often complicates tuberculosis of the lungs is a sort of protective mechanism, and that the compression of the lung which is produced by a large effusion into the pleura has an influence in retarding or holding in check the major disease. In fact the idea has grown up, although it is held by some to be a mere prejudice, that tuberculous pleurisies should not be interfered with. Dr. Murphy, however, is so impressed with the importance

of giving rest to a tuberculous organ that he proposes to obtain by surgical means that compression of the lung which he looks upon as so important an agent in stopping the progress of tuberculous disease in its tissues. He proposes, in fact, to fill up the pleura with **Sterile Nitrogen,** which, being slowly absorbed, may be allowed to remain for months without injury to the patient—in fact, "until the disease is cured." There is but little doubt that Dr. Murphy is right when he says that "the prominence of tuberculosis of the lungs is due to the opportunities for infection, and not to lowered resistance," and, perhaps, this would be still more true if he spoke of opportunities for re-infection. The suggestion, of course, is that when the lung is collapsed these opportunities are put a stop to. "Rest favours resistance, and by the injection of nitrogen the diseased lung will be allowed to rest. Any functionary useless organ is the seat of connective tissue overgrowth. Thus, as the lung is a functionary organ at rest, these tissues rapidly form and enclose the destructive germs in a prison." Dr. Murphy has over two hundred patients who are undergoing the operation.

A most satisfactory apparatus for injecting the nitrogen gas is manufactured by the Chicago Oxygen Gas Company, and endorsed by Dr. Murphy *(Fig. 28).*

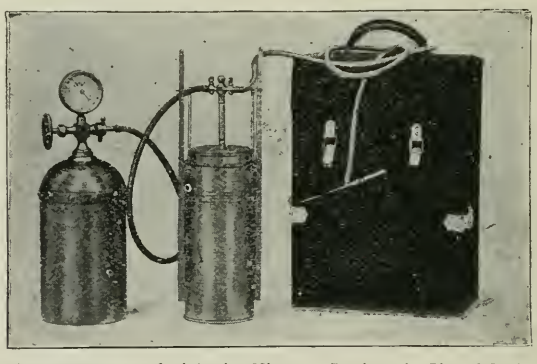

Fig. 28.—Apparatus for injecting Nitrogen Gas into the Pleural Cavity.

The apparatus is so constructed as to show the exact number of cubic inches of gas injected; ordinarily from 1 to 2 quarts of the gas are injected at a sitting. The patient complains of little or no distress following the injection.

Dr. E Fletcher Ingals,[19] of Chicago, writes an important paper on

the value of **Systematic Physical Training.** He says, "Systematic physical training, which would develop the respiratory muscles, expand the thoracic walls, and correspondingly increase the pulmonary capacity, is of great service, not only in preventing tuberculosis, but in curing its early stages. Collapsed air-cells furnish a most favourable nidus for the development of the tubercular process; therefore, for prevention of the disease, we should adopt measures to expand the lungs and bring the air-cells into the best possible working condition. In most cases there is probably a pretubercular, or at least an early tubercular, localised anæmia which, by diminishing the nutrition of the parts, lessens their resisting power and makes them peculiarly susceptible to the malign influences of the tubercle bacilli and the toxins which they produce.

"The expansion of air-cells not only empties them of the noxious principles, but equalises the pulmonary circulation and removes the localised anæmia. As a means, then, of prophylaxis, our first measure should be to teach the patient to breathe deeply.

As beneficial results have been attributed to the action of the **X-Rays** on tubercular foci in the lungs, it is interesting to note in this connection a report of Drs. Bergonie (Bordeaux), and Teissier[17] (Paris), embodying the results of some experiments of their own as to the effect of the X-rays on the tubercle bacilli, and reviewing critically the results recorded by others. They conclude that animals infected with tuberculosis in various ways, and subjected for more or less prolonged periods of time to the action of the rays die for the most part without appreciable modifications of the lesions, and without any retardation in the evolution of the disease. This is somewhat different from the report of Rodet and Berlin-Sans, who showed that animals so treated lost weight, and apparently their death was hastened by the rays. When the dermatitis can be graduated, the effect of the X-rays in cutaneous tuberculosis is favourable. The only thing definitely assignable to the rays is a local inflammation, which is of doubtful therapeutic value and could be obtained by more manageable methods.

Serious digestive disturbance has also been observed after the treatment. The authors sum up their conclusions in the statement that the results of the X-rays on tuberculous pulmonary lesions have so far been almost entirely negative. Not only has the disease not been cured, but its evolution has not been stopped or even checked. It may be taken as proved that up to the present time the action of the rays is, if not dangerous, of no therapeutic efficacy whatever.

Creasote still continues to be the drug most extensively used in this

country in the treatment of pulmonary tuberculosis, although it meets with small favour in Europe and is not prescribed in any of the great sanatoriums of Germany. Considerable experience in the use of creasote in tuberculosis has convinced many that it is most valuable in those cases in which there is an associated bronchitis of a chronic type characterised by profuse expectoration. In other words the creasote acts as a stimulating expectorant by aiding in the expulsion of muco-pus from the bronchial areas, relieves the lung of secretion, and thereby aids the respiratory movements. On the other hand, in those cases of pulmonary lesion in which the bronchial symptoms are not marked, we have never been able to see that creasote exercised any beneficial influence. On the contrary, it has seemed in many cases to disorder the digestion and thereby destroy the most powerful factor that we can call to our aid in maintaining the patient's nutrition. It ought to be recognised, therefore, that creasote is a valuable remedy for the relief of the bronchial complications of tuberculosis, and exercises but little good so far as the tubercular focus itself is concerned.

Dr. Russell[18] compares the results obtained from the use of **Iodoform** in one hundred and twenty-three cases of phthisis, with those obtained by the ordinary tonic plan of treatment in forty-eight cases. All received cod-liver oil. The patients were under observation from four to thirty weeks. Eighty-eight patients took a maximum daily dose of from 24 to 30 grains per diem, and only five failed to reach a maximum of 15 grains per diem. A comparison of the respective weights of the patients at the end of a period of from six to twelve weeks showed 8·9 per cent. more gains and 11·1 per cent. fewer losses among the iodoform cases than among those not so treated—a decidedly better result. Out of eighteen patients who had attended for over ten weeks, 55·5 per cent. gained in weight, and only 27·8 per cent. lost, while all the patients, with two exceptions, who attended for over ten weeks had gained in weight at the end of their period of attendance. The author believes that better results can be obtained by its means than by the ordinary tonic and symptomatic line of treatment.

Salinger[19] advocates the use of **Benzosol** (guaiacol benzoate). The remedy is given alone; no other medicament or tonic is used in combination with the benzosol. Doses of 5 grains, and in some instances 10 grains, should be administered three times daily. The benzosol is given in the form of powder or compressed pill. No attempt is made to claim for benzosol that it is a specific in chronic pulmonary tuberculosis. The fact may, however, be emphasised that

it has all the advantages of creasote without its drawbacks. The cases most benefited by benzosol are those in which, besides the pulmonary lesion, there are gastro-intestinal symptoms. The exhaustive diarrhœa of phthisis is usually promptly relieved by its use.

Coston[20] claims **Camphoric Acid** gives the best results in the *night sweats* which accompany tuberculosis. After the defervescence of fever, when the nervous centres are so debilitated that they do not properly innervate the body during sleep, the patient loses more from the profuse perspiration than he gains by the sleep. In these cases a 20 or 30-grain dose of camphoric acid will act so well that no sweating will occur, and the patient will awake refreshed rather than exhausted. It is not a remedy whose beneficial effects last only a few hours, for as a rule he did not have to give the second dose for several days, and he does not remember ever to have had to repeat it the same night.

M. Combermale,[21] of Lille, made a communication to the Academy of Medicine with regard to the efficacy of **Acetate of Thallium** in checking the profuse perspiration of phthisical patients. It was administered in the form of pills each containing 1½ grains (10 centigrammes), and this was usually the dose for one day; very rarely were 3 grains (20 centigrammes) given. It was found expedient never to prescribe it more than four days in succession, because the effects were very persistent, sometimes continuing as long as from eight to ten days. The drug should be administered about an hour before the time perspiration usually occurs.

De Renzi[22] advises the use of **Thymol** in the relief of fever in the tuberculous. It is given in doses of 4 capsules daily, each containing 3¾ grains. The dose is augmented until apyrexia is attained. Between 90 and 105 grains suffice to subdue the fever.

In the conservative treatment of *tuberculous arthritis*, Redard, of Paris, employs intra-articular injections of **Olive Oil** containing 5 or 10 per cent. of **Iodoform** and **Ether**. He has reported cases, however, in which it caused very painful distension with gangrene of the skin. He recommends that injections should be made around the joint into the fungating masses, and around and into the fistulous tracts. As regards white swelling of the knee, he has obtained complete success in 60 per cent. of the cases; as regards the joints, in 40 per cent. This method better than any other insured the preservation of movements of the affected joints.

Calot[23] says the best treatment of cold abscesses is not a so-called radical procedure which is often disappointing in its results, and which always causes too great loss of substance, nor is the expectant method

the best. He looks for still better results from the orthopædic point of view, and he proposes in future to direct his efforts to the restoration of movements.

J. D. Thomas[24] gives several cases of hæmoptysis in which **Atropine** administered hypodermically acted promptly and well, and often when all other remedies had failed. He quotes other observers who have had a similar experience. The dose employed was $\frac{1}{200}$ gr. to $\frac{1}{60}$ gr. Its mode of action when given in large doses ($\frac{1}{50}$ gr. to $\frac{1}{25}$ gr.) is by lowering the blood pressure in the general arterial system.

REFERENCES.—[1] "Brit Med. Journ.," Oct. 1, 1898; [2] "Treatment," Feb. 9, 1899; [3] "Brit. Med. Journ.," Aug. 27, 1898; [4] Ibid., Aug. 13, 1898; [5] "Amer. Journ. Med. Sci.," Jan., 1899; [6] "Med. Press and Circ.," Sept. 28, 1898; [7] "Brit. Med. Journ.," Aug., 1898; [8] Ibid.; [9] "Practitioner," Oct., 1898; [10] "Inter. Med. Mag.," 1899; [11] "Practitioner," Oct., 1898; [12] "Amer. Journ. Med. Sci.," Sept., 1898; [13] "Inter. Med. Mag.," Jan., 1899; [14] "Journ. Amer. Med. Assoc.," Oct. 28, 1898; [15] "Hosp.," July 10, 1898; [16] "Therap. Gaz.," Nov. 15, 1898; [17] "Brit. Med. Journ.," Aug. 10, 1898; [18] "New York Med. Journ.," Aug. 20, 1898; [19] "Therap. Gaz.," March 15, 1899; [20] Ibid., March 15, 1899; [21] "Glasgow Med. Journ.," May, 1898; [22] "New York Med. Journ.," Aug. 6, 1898; [23] "Brit. Med. Journ.," Aug. 20, 1898; [24] "Phil. Med. Journ.," July 16, 1898.

PITYRIASIS.

T. Colcott Fox, M.B.

Dermatitis exfoliativa (*Pityriasis rubra*).—Dr. Walter Smith,[1] of Dublin, introduced a debate on this subject at the Dermatological Society of London. He divided the history of this affection into: (1,) The early, or Devergie-Hebra, period, when it was described as a peculiar and primary disease of the skin; (2,) The second, or Buchanan-Baxter, period, when this writer co-ordinated our knowledge as it then stood, and showed that the affection was met with either as a primary or secondary affection, and demonstrated its relationship to several other affections of the skin; (3,) The third or present stage of revision of our knowledge.

There is a general agreement that the most distinctive features of the affection are as follows, although none will bear a close critical examination, or are free from numerous exceptions taken singly or collectively:—

(1,) Its tendency to become quickly universal.

(2,) Intense vivid redness, with but little infiltration and thickening.

(3,) Free desquamation of papery scales; no formation of crusts.

(4,) Frequent impairment of general health, progressive, it may be, unto death. This is notably true of cases occurring in early life.

(5,) Proneness to relapse.

(6,) Not very definitely influenced by treatment.

The morbid anatomy does not help us very much, and this condition cannot be definitely associated with any special blood changes, or microbe, or neurosis (Hebra and Hutchinson) or rheumatism (Crocker), or tuberculosis (Jadassohn). On the whole Dr. Smith is inclined to regard the term *Exfoliative dermatitis* as a convenient and even necessary peg whereon to hang a clinical picture, and sufficiently serves to emphasise a complex of certain nosological characters, such as rapid onset, involvement of the whole or greater part of the surface, intense redness, and copious and continued foliaceous desquamation. There are forms which are apparently primary, and others, and perhaps the majority, which are secondary and following on such different affections as eczema, psoriasis, erythemata, lichen ruber, erysipelas, dermatitis herpetiformis, pemphigus (perhaps in children), syphilis, and dermatitis, set up by strong external irritants (chrysarobin, mercury), or by internal remedies (mercury, chloralamide, etc.). Mycosis fungoides may be preceded by a somewhat similar condition. The special features of dermatitis exfoliativa are probably due to individual proclivity or special vulnerability of the skin in certain individuals.

TREATMENT.— Dr. Smith declared the treatment to be not satisfactory. The principle of **Therapeutic Rest** is here valuable. Emollients, oily rather than watery applications, with mild antiseptics and astringents are the lines to follow for local treatment. In one case **Liquor Carbonis Detergens** afforded great relief, and in another **Pilocarpine**, freely used, only relieved irritation. Several authorities commend **Cod-liver Oil.** Arsenic does not seem likely to be of service, and is probably avoided by most dermatologists or has disappointed them. Still some authors recommend it. **Antimony, Thyroid Extract,** and **Quinine** in large doses have been advocated.

The ensuing discussion brought out a very general agreement with the introducer's views. Crocker keeps his patients in bed for a rest and a uniform temperature, and covers the skin constantly with an oily application or Lassar's paste, and supports the strength by the dietary and by large doses of quinine with effervescing potash mixture. Stephen Mackenzie got the best results from watery applications, as distinguished from the oily ones. His favourite application was a lotion of glycerin of subacetate of lead, 1 ounce ; glycerin, 1 ounce ; water to a pint. With this the patient was swathed from head to foot in a suit of lint, and a mask soaked in the lotion, whilst kept between blankets to prevent bronchitis or broncho-pneumonia. He had never known lead absorption in some forty or fifty cases so treated. When

the redness disappeared he cautiously tried greasy applications, such as simple vaseline or spermaceti ointment, rather than zinc ointment. Pilocarpine subcutaneously had been useful, but he had discarded arsenic, antimony, phosphorus, quinine, and thyroid extract. Pringle had found **Antipyrine** in full doses useful; Liddell, of Harrogate, **Salicylate of Sodium** and **Iron.** Malcolm Morris gave opium where the kidneys were sound and the sleeplessness great. Prolonged mucilaginous or demulcent baths were often grateful.

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PLACENTA PRÆVIA. (See "Labour.")

PLAGUE. *James Cantlie, F.R.C.S.*

During the year 1899 plague has existed in a sporadic or epidemic form in Europe, at Oporto; in Africa, in Egypt and Portuguese East Africa; in Asia, in all three Indian provinces; at the port of Mecca; in Hong Kong, Macao, and South Eastern China; in America, at Santos in Brazil; and in the islands of Mauritius and Madagascar. In Southern China, in the Bombay Presidency, and in Mauritius the disease has occurred in an epidemic form; in other places a milder form of the disease has prevailed. During the past year the varieties of plague have been systematised, and the terms employed are descriptive of the signs and symptoms: (1,) Bubonic plague; (2,) Intestinal; (3,) Pneumonic; (4,) Convulsive; (5,) Toxic; (6,) Typhus type; (7,) Pestis sidereal; (8,) Pestis ambulatory; (9,) Pestis minor. The above classification serves the purpose of drawing attention to the divergency of the viscera involved in plague.

The Serum Treatment of Plague.—Four different fluids are at present known in either the prophylactic or curative treatment of plague. In a paper by Dr. F. G. Clemow,[1] the efficacy of these fluids is summed up: (1,) Haffkine's fluid is a pure growth of the plague bacillus, in which the organisms have been killed by raising the temperature of the fluid containing the growth to 58° C. for one hour. It contains the dead bodies of the killed bacilli and the chemical products of their growth.

Haffkine found different media giving rich cultures o plague bacilli, but so virulent were they that even two minims sufficed to destroy the largest rodents. To lessen its virulence the fluid was bereft of its bacilli by heat, but the fluid left after filtration proved ineffective. To obviate these shortcomings Haffkine, in order to accumulate extra cellular toxins in the serum, cultivated the bacilli on a liquid medium, on which they were suspended by drops of ghee (clarified butter) or cocoa-nut oil. The bacilli grow in long threads downwards into the

culture medium, and produce a "stalactite-looking" growth, typical of this microbe. The toxins secreted accumulate in the liquid: the culture preparation is periodically shaken off the drops of oil, and underneath the surface of the liquid a new crop appears. The bodies of the microbes collect at the bottom of the culture tube, and the liquid becomes charged with toxins. The process is kept up for five or six weeks, when the microbes, by heating to 65° or 70° C., are rendered harmless. The dose of the prophylactic thus prepared by Haffkine is usually 3 cubic centimètres. The operation is followed, by some pain, symptoms of feverishness and swelling at the seat of puncture. In two or three days all discomfort disappears.

In a paper read before the Royal Society,[2] Haffkine claimed not only prophylactic uses for the serum, but also demonstrated that the case mortality of plague has been reduced by some 50 per cent. from inoculations with the serum.

The Duration of the Effect of Plague Inoculation is not yet determined; but as a temporary expedient the government of India have recognised inoculation certificates entitling the holder to exemption from plague rules for six months. This may be extended in time, but it serves to tide the person inoculated over at least one epidemic recurrence of the disease.

In a paper by Haffkine and Major Bannerman,[3] I.M.S., on the testing of **Haffkine's Plague Prophylactic**, ample proofs are to hand of the efficacy of the serum. A well marked proof in this respect is afforded by the reduction of mortality from the use of the serum in the Khoja Mussulman community of Bombay. Out of three thousand eight hundred and fourteen inoculated persons of this community but three deaths from plague occurred, whilst of nine thousand five hundred and sixteen uninoculated persons fifty-nine deaths occurred—a reduction of mortality amounting to 86 per cent. in the average.

Yersin's Serum was tried by Dr. F. G. Clemow in five cases of plague, and he comes to the conclusion that this serum is useless in the treatment of plague, without influence for good or evil either upon the disease as a whole or upon the individual symptoms. Symmers, of Cairo, arrives practically at the same conclusion, and, in fact, until Calmette employed a modification of the original (Yersin) serum, at Oporto, in 1899, it was wholly discredited as a therapeutic agent. Calmette speaks highly, however, of Yersin's serum as now prepared, and in his hands he claims to have reduced the mortality from plague in Oporto to almost nil.

Lustig's Serum was employed in thirteen cases of plague in the Pard hospital, Bombay. Dr. Clemow, who watched the effects of the

serum, found that of the thirteen cases treated, ten died—being a mortality of 77 per cent.—and comes to the conclusion that, so far as these cases show, the claims of Lustig's serum as a "curative" agent are at least equivocal.

Roux's Serum has not been tried sufficiently extensively to justify any conclusion being arrived at.

The Vitality of the Plague Bacillus.—This question, so important from prophylactic, infectious and quarantine points of view, has been specially dealt with by Hankin, Wilm, and Abel. The plague bacillus will live in acid urine for twenty-four hours, in acid fæces scarcely so long, and in alkaline (cow's) fæces for four days. Grain infected by cultures of the plague microbe and exported on board ship from Bombay showed that the bacillus perished within thirteen days. Hankin recommends for disinfecting buildings sulphuric acid (1 in 250), corrosive sublimate (1 in 1,000), with hydrochloric acid added in the proportion of 2 in 1,000.

The Commencement of Plague Epidemics.—Professor W. J. R. Simpson[4] draws attention to the insidious commencement of plague, and the unwise efforts invariably attempted when it first appears in a district or city, to quench the palpable warnings of its incursion. Dr. Simpson cites the case of the Shropshire regiment, which came to Calcutta from Hong Kong. The soldiers of that regiment suffered at intervals from fever, accompanied with glandular enlargements during 1895, or twelve months before plague was officially declared to be present in the city. Moreover, other drafts of soldiers who had never been in Hong Kong or exposed to plague, acquired the malady. At first the disease was looked upon as venereal, as malaria with bubo, etc. Professor Simpson believes that it is upon the milder forms of the disease rather than upon the more pronounced that a special watch has to be kept.

Pneumonic form of Plague.—Captain Childe[5] observed that in Bombay, during an epidemic of plague, there was an unexplained increase assigned to remittent fever, pneumonia, etc. He found twelve cases in which during life there was no suspicion of plague, and in which all the symptoms pointed to disease of the lungs, but which exhibited plague bacilli in numbers in the lung and bronchial passages *post-mortem.*

Rats as Carriers of Plague.—So intimately is the spread of plague associated with rats and mice that their destruction has been advocated [Manson,[6] Cantlie[7]], as the chief prophylactic measure to be adopted. Although goods carried by sea or rail are scarcely regarded as of themselves carriers of infection, yet Cantlie[8] recommends the destruction

of all cargo on plague-infected ships in which rats are or have been recently present.

REFERENCES.—[1] "Lancet," May 6, 1899; [2] Ib'd., Jan. 24, 1899; [3] "Brit. Med. Journ.," Sept. 24, 1898; [4] Ibid., Sept. 24, 1898; [5] "Lancet," June 3, 1897; [6] "Brit. Med. Journ.," Oct. 7, 1899; [7] "Pract.," Nov., 1899; [8] Ibid.

PLEURISY. *W. Gilman Thompson, M.D., New York.*

Sero-Fibrinous Pleurisy.—Two theories prevail as to the mode of formation of the false membrane in pleurisy with sero-fibrinous effusion:—

(1,) The older theory is that the membrane is produced by fibrin derived from a previously formed liquid inflammatory effusion.

(2,) The newer theory (advocated by Grawitz, Neumann, Borst, and Lazarus-Barlow) is that the membrane is derived from a peculiar alteration of the subendothelial connective tissue of the pleura, which process Neumann calls "fibrinoid degeneration."

In support of this latter view it is claimed that the "false membrane" of pleurisy is often covered by endothelium, which of course could not be if the fibrin were an outside deposit. Moreover, Borst found that when a solution containing iodine and potassium iodide is injected into the peritoneal cavity of guinea-pigs a similar process accompanies the resulting peritonitis, namely, active endothelial proliferation.

In order to further investigate the nature of the pleuritic false membrane, Lazarus-Barlow[1] studied serial sections of pleura, cut parallel with its surface under these conditions:—

A. Pleura of Guinea-pig.
- (1,) Normal.
- (2,) After injection of diphtheria toxin into the pleural cavity.

B. Human Pleura.
- (1,) Normal.
- (2,) In hypostatic congestion.
- (3,) Early pleurisy in diphtheria.
- (4,) ,, ,, pyæmia.
- (5,) ,, ,, lobar pneumonia.
- (6,) Later, but still early pleurisy in glanders.
- (7,) ,, ,, ,, ,, generalised miliary tuberculosis.

As a result of this research he found three pleuritic processes: (1,) Fibrinoid degeneration, plus cellular infiltration; (2,) Connective tissue proliferation occurring alone; (3,) Conversion of the pleura into young vascular cicatricial tissue.

After experimentally injecting diphtheria antitoxin into the pleura of guinea-pigs, within an hour polynuclear neutrophile cells filled with granules transuded in large numbers. It would appear from the experiments of many investigators that the pleura undergoes several

types of pathological change in response to various forms of irritation. In other words, the irritant or toxin of tuberculosis may differ from that of rheumatism, for example, in the resultant effect on the pleural membrane—a fact which renders the whole subject more difficult, but may account for some of the variance between experimental processes and those caused by disease. Allowance, too, must be made for the duration of the pleurisy and the degree of proliferation attained, in interpretating pathological findings.

Spirilla of peculiar nature have been found by Welke,[2] of Munich, in the pleural exudate. A soldier giving the physical signs and clinical picture of pleurisy and pneumonia, was aspirated from the left chest, and a fœtid, purulent exudate was found, which contained, besides the usual leucocytes and streptococci, numerous actively-motile, filiform bodies, varying in length from 100 to 140 μ ($\frac{1}{250}$ to $\frac{1}{180}$ in.). In some, fusiform processes were prolonged from their ends. The organisms were regarded as accidentally present, and were not bacilli but probably spirilla. There was no explanation of the mode of entrance of the germs to the pleural sac. The exudate finally ruptured spontaneously into a bronchus, and the patient recovered.

G. Carriere,[3] of Lille, has made special study of the displacements produced by pleural effusion, from which he concludes that, as a rule, the heart is displaced by left-sided effusion ; but that in the upright position more than a litre of the fluid is required to cause appreciable displacement, but with more than this quantity the long axis of the heart assumes a vertical position, without torsion. The apex is never displaced to the right of the xiphoid cartilage, and when as much as six litres of fluid are injected into the cadaver, torsion fails to result. He believes that torsion, if it were produced by pleuritic exudate, would be necessarily fatal, for the left ventricle could not empty into the aorta. On the right side accumulation of more than one litre of fluid pushes the heart towards the left axilla and downward. He finds that the displacements are produced through the agency of the diaphragm, which is crowded out of its relations by the fluid. The cardiac displacements may alter the rhythm of the heart, but this is not invariably the case even with left-sided fluid.

Le Damany[4] believes in the tuberculous origin of all primary pleurisies, and argues that the fluid is conservative, preventing full expansion of the lung, and thereby allowing the pleural tuberculosis better opportunity to heal. It is believed, moreover, that fresh tubercles do not readily form in a collapsed or atelectatic lung. He therefore postpones thoracentesis in sero-fibrinous pleurisies until danger arises from excessive accumulation of fluid. The belief that

more than 70 or 80 per cent. of sero-fibrinous pleurisies are tubercular is not yet generally accepted, and from the standpoint of practice in the United States, early aspiration of all pleurisies is gaining in favour. The operation of thoracentesis in these cases is wholly without danger, with antiseptic precautions. In an experience with several hundred aspirations I have never known but one casualty, and that was when my house physician ran the needle into a thoracic artery which lay abnormally upon the wrong side of a rib. He cut down upon the vessel and tied it, and the hæmorrhage was not fatal. As for the early aspiration, the advantages of gaining prompt re-expansion of the lung and better oxidation far outweigh the hypothetical gain from the slight relative immobility secured by the presence of fluid, which may at any time reach a dangerous accumulation or become infected with pyogenic cocci.

I have quite a large collection of temperature charts illustrating the prompt disappearance of fever after aspiration, although of course in extensively tuberculous cases this is not always to be expected. Almost any hospital in this country can furnish records of cases cured by one or two aspirations—cured at least of the immediate attack, and so remaining for months or years.

Apropos of the non-tubercular origin of certain sero-fibrinous pleurisies, appears a recent article by that able author, Lauder Brunton,[5] in which he recognises that the disease may follow traumatism—such as a blow over the ribs, or be the result of a severe chill.

Janowski,[6] of Warsaw, describes at length the crepitant *râle* sometimes present in pleurisy with effusion over the level of the fluid when the quantity of fluid is small. The *râle* belongs to inspiration, and is superficial and small, and more soft and moist than the early *râles* of pneumonia and smaller and more regular than the terminal *râle* redux of pneumonia. If these *râles* be present after aspiration, it is regarded as a sign that some fluid still remains; but Janowski believes that their cause lies in the adhesion of the walls of the superficial alveoli, compressed during expiration and separated during inspiration. He also explains the inconstancy of this sign in some cases by the theory that the resisting power of the lung varies in individuals, and the soft moist character of the *râles* is due to the greater fluidity of the alveolar contents as compared with the fibrinous exudate of pneumonia. Furthermore, in the latter disease there may be a layer of fibrin over the pleural surface, instead of the fluid which in sero-fibrinous pleurisy possibly modifies the accoustics of the sound transmission.

Hæmorrhagic Pleuritis in Children.—Lewin[7] found four cases of

hæmorrhagic exudate among fifty of pleurisy with effusion. Reiner found this condition five times among one hundred and twenty-one cases, and Israel twice in two hundred and six cases. This makes a total of eleven hæmorrhagic examples among three hundred and seventy-seven cases. Of Lewin's four cases three recovered, and the other passed from observation. They occurred between the ages of one and five years, and in each case tuberculosis, syphilis, malignant disease, cardiac and renal disease, acute infections and a hæmorrhagic diathesis could be excluded, according to the authority quoted, although in the absence of autopsy or the use of the tuberculin test, it would seem difficult to positively exclude tuberculosis from what appeared to be rare idiopathic examples. The presence of a sanguineous exudate can only be determined by exploratory puncture for the hæmorrhage is rarely sufficient to produce pallor or other symptoms of internal bleeding.

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PNEUMONIA.

Prof. H. P. Loomis, M.D., New York.

A study of the work of the past year in the application of **Serum Therapy** in the treatment of pneumonia, brings one to the conclusion that up to the present time it can scarcely be said to amount to more than an encouragement to continue along this line of work. No really decisive results have been obtained. In some cases the effect seems to have been favourable, but in view of the invariable course of pneumonia under all forms of treatment, it is impossible to assign to injections any positive share in the results. It can be only by the accumulation of a large number of observations that a conclusion as to the value of the treatment can be arrived at. And invariably the difficulties in the way of extensive observations are such as to deter most investigators from pursuing the subject.

Dr. Andrew H. Smith,[1] in the course of an able paper on this subject, says he believes that the first difficulty is found in the short life of the pneumococcus, and its feeble powers of resistance. Cocci that are virulent at the beginning of an investigation, cease to be so as the investigation proceeds. On the other hand, toxins that are expected to produce only a moderate reaction when injected, sometimes display an unlooked-for virulence. Animals apparently progressing normally toward immunity, most unexpectedly succumb to septicæmia from a

dose of toxin supposed to be entirely within the limits of safety. Again, animals that were readily immunised at first, lose their immunity in spite of renewed inoculations, and the serum obtained from them ceases to be reliable. This variation in the conditions under which experimentation is conducted is liable to vitiate the most carefully-drawn conclusions. If this be true, under the favourable circumstances of the laboratory, what must it be in the exigencies of ordinary practice? If before employing a therapeutic agent we must resort each time to experiment to test the value of the specimen in hand, the usefulness of the agent will be very limited.

Dr. Manges says: "In the treatment of pneumonia too much emphasis cannot be laid upon the importance of watching the stomach. Generally, not enough attention is paid to ascertain whether this organ is unduly distended with gas or improperly digested food. Routine percussion of the stomach is often of far more importance than routine examination of the lungs. The heart must be spared in every way, in order that its burden be not unnecessarily increased by upward displacement from the unduly distended stomach and intestines. Patients should not be over-fed. The disease is a very short one, and the patient's surplus fat and tissues will supply any deficiency in the diet. Spare the stomach from undue medication as much as possible, and use the hypodermic method in preference. All articles of diet which may produce flatulence must be rigidly excluded, and the milk given must be adapted to the patient both in quantity and in preparation. Water given freely, either cold, hot or carbonated, not only allays thirst and reduces fever, but increases the elimination of toxins by permitting free diuresis. **Strychnine** is still the drug most freely employed as a cardiac stimulant.

"The consensus of opinion is that it should be given in large doses, and preferably by hypodermic injections when there is any question as to the stomach absorption. The control of the *fever* in pneumonia is not considered at the present time of as much importance as it formerly was. Temperatures ranging up to 104° F. are as normal a feature in pneumonia as dyspnœa and rusty sputum. The view which is now generally accepted is that fevers up to *this* point are the normal reaction of the organism against the invading pneumococci. That these normal fevers are of service to the patient is well shown in a table published by Douglas Powell, in which he demonstrates that pneumococci grow to perfection at 95° to 98·6° F., and not at all at 104° F. to 107·6 F. He also draws attention to the value of leucocytes of fever in removing torpid or inert cocci. The thermometer, therefore, is not the only gauge as to the question

of the fever being unduly high. The true gauge is the patient's general condition.

"Quite recently a new drug, **Heroin,** has been used as a sedative for the thoracic symptoms of pneumonia, and, as far as reported experiences go, the drug appears to be of value, especially in acute distressing coughs, and has acted well in some cases which were not relieved by codeine. It is given in doses of $\frac{1}{12}$ to $\frac{1}{6}$ of a grain, every four hours, in tablet triturates or powders.

"The value of **Oxygen** in the relief of dyspnœa and cyanosis is as yet difficult to determine. The opinion is slowly but surely gaining ground among the great clinicians that oxygen has been much overrated in the treatment of pneumonia. Only in tiding the patient over sudden attacks of dyspnœa or cyanosis does oxygen appear to be of any especial use. Its effects soon wear off, if it is given continuously and at the best are only temporary."

In a recent discussion upon the treatment of pneumonia in children, Dr. L. Emmett Holt[2] thus summarises his views: (1,) No depleting measures are ever admissible; (2,) Hygienic treatment is indicated, such as fresh air, proper feeding, and good nursing; (3,) No unnecessary medication is permissible; (4,) Many annoying symptoms may be relieved by local treatment; (5,) The administration of stimulants should be determined solely by the condition of the pulse; (6,) High temperature is much more safely and effectively controlled by cold than by drugs; (7,) Greater caution is necessary in the use of powerful drugs than is generally observed; and (8,) Rest is quite as important as in any other serious disease.

The statement has been made by those conversant with the diseases of children, that children frequently suffer from the invasion of pneumococci. Among the clinical manifestations which result, those affecting the larynx are most prominent, and consist in attacks of suffocation. Sometimes there are false membranes upon the vocal cords, so that the expression, pneumococcus croup is justified. In other cases the vocal cords are unaffected. A number of cases have been reported closely resembling diphtheria, but a bacteriological examination proved the true nature of the disease. In some cases intubation has been successfully performed with good results; in other cases cold packs to the thorax, subcutaneous injections of caffeine, and especially of serum, have been given.

Dr. Francis P. Denny[3] describes *Streptococcus Pneumonia* as being little known or understood in this country. It has been described, among others, by Finkler, Wasserman, Weismayr, and Neusser, and has characteristic features of its own. Its onset may be like that of

ordinary pneumonia, but often is less sudden. The ordinary symptoms—malaise, feverish and chilly sensations, pain in the side, and cough—are usually present. The sputum is more purulent and less often rusty, and contains streptococci as well as pneumococci. The patient has a peculiar septic look. The fever is irregular. There is no crisis, and the temperature comes down by lysis often after a course of three or four weeks. The physical signs are usually late in appearing. The upper lobes are more frequently involved than in ordinary pneumonia. There is a marked tendency for the local process to wander. The most characteristic feature of all is the long duration, with the shifting character of the physical signs.

Maragliano[4] treats pneumonia almost exclusively with large doses of **Digitalis,** not for the purpose of treating the symptoms, but with the idea of actually neutralising the pneumococcus toxin in the same way as is done by the serum. The dose he recommends is 1 drachm of digitalis in infusion during the first twenty-four hours, and in a severe case another drachm in the second twenty-four hours. Generally, 3 or 4 drachms in infusion are given during the course of the pneumonia. If the pulse becomes infrequent the doses are diminished. These high doses are well borne by pneumonia patients. According to Maragliano, the digitalis and the pneumonial toxins neutralise each other. He has shown by bacteriological experiments that 1 cg. of digitalis added to 10 gms. of a culture of pneumococci killed them rapidly, and even 3 mg. of digitalis were enough to inhibit the growth completely. This action was specific, since the growth of other organisms was not influenced by the addition of digitalis. On the other hand, other alkaloids, such as cocaine, had no influence in the same doses on the growth of the pneumococcus. These interesting experiments are further elaborated so as to show that digitalis, when injected at the same time as a fatal dose of pneumococcus toxin into rabbits, neutralised its effect, and the animal recovered. Clinically, it has been found that digitalis acts on the fever and inflammatory processes in proportion to its effect on the pulse. If this effect on the heart and the pulse is not obvious within two hours, the prognosis is bad. It is important to begin the digitalis treatment of pneumonia within the first three days of the disease, to obtain any such results.

Pilocarpine, which it may be remembered, was introduced into the treatment of acute pneumonia a few years ago by a Hungarian physician, Dr. Sziklai, who reported that he found it to be a specific against the disease, has not borne the test of an extended clinical use, although confirmatory reports of the good effects of pilocarpine are published by a number of observers.

Dr. Rosenbery, of Klausenburg, has made during the past year an extended study of this subject, and his conclusions are interesting as pointing out the utter uselessness of pilocarpine in the treatment of pneumonia. His conclusions are that, in the cases treated with pilocarpine, the physiological, or as he prefers to call them, the toxic effects of the drug were superadded to the symptoms of the disease.

A good deal of attention has been given to the subject of *Ether Pneumonia*, which is the most fatal lesion following anæsthetisation. In the medical and surgical reports of the Presbyterian Hospital, New York, twenty-seven cases of pneumonia are reported following the use of anæsthetics during ten years. Pneumonia followed the use of ether in seventeen cases, being 0·346 per cent., with a mortality of almost 50 per cent., while with chloroform the percentage of cases was 1 in 16, with the large mortality of 87 per cent. in cases of pneumonia following operation. Dr. McCardie, anæsthetist to the General Hospital, Birmingham, says possibly the mortality following chloroform narcosis may be due to the fact that the cases having taken chloroform presented almost uniformly evidence of some malignant lesion of the mouth or upper respiratory tract. The danger of ether pneumonia is especially great in children, and statistics have proved that it is especially liable to follow operations involving prolonged manipulation within the abdomen, and the consequent exposure of the abdominal contents. The interval between operation and the onset of pneumonia varies generally from five to seven hours as a minimum and to twenty-five days as a maximum. In the majority of cases the, fever and pain in the side sometimes develop within three or four days after etherisation. There is no doubt but a certain percentage of ether pneumonia cases pass unobserved, or else sometimes the fever, with or without cough after etherisation, has been attributed to bronchitis or to other disease. It is only within the last few years that much attention has been directed to the subject. To guard against the development of pneumonia following etherisation, various plans have been suggested, such as turning the head to one side, the use of small quantities of ether given with exact regulation by an enclosed inhaler, rather than of a large quantity given by an open method; also cleansing the naso-pharynx, nasal passages, mouth and throat, previous to etherisation, has been recommended. It is certainly advisable that the length of operation should be minimised, and that unnecessary exposure of the patient should be most carefully avoided, and during laparotomy a hot water chamber beneath, and long, hot bottles at the side of the patient will greatly lessen the danger of chill and depression of the vital powers.

Of late years there have been powerful advocates of **Bleeding** in certain cases of acute pneumonia.

Dr. Strube,[5] of Berlin, recommends it highly in the following condition: When, in spite of the use of cardiac tonics and stimulants, the heart's action shows signs of failing, the right side dilating, and cyanosis and œdema of the lungs becoming marked, then bleeding may be powerful to save life. It is sufficient to remove from seven to eight ounces of blood. Dr. Strube also believes that the treatment of pneumonia by this method is suitable in a few special cases, as of a robust patient suffering from intense delirium, with generally an alcoholic history.

Dr. Plicque[6] believes that in all cases of pneumonia, when the dyspnœa is an urgent symptom, bleeding constitutes the sole efficient mode of treatment. Even when the heart is failing and the pulse feeble, he believes that bleeding constitutes the most rapid means of strengthening its action. Caffeine by hypodermic injection and digitalis by the mouth are useful adjuncts.

Dr. Becker[7] advocates the use of **Salicylic Acid** in acute pneumonia. He believes that if given early it is a true preventive. He reports eleven out of twelve cases that were rapidly cured by the treatment, and has noted that following the use of the salicylic acid the expectoration becomes liquid, and at times consists of pure blood. He believes that the guiding symptom should be the expectoration in the giving of salicylic acid. It should be given until this is free. Cardiac disease and extreme weakness are contraindications of this treatment. He gives 7 grains of salicylic acid every two or three hours in the case of an adult, and 1 to 1½ grains every hour in the case of a child, coffee, chocolate, and milk being given after its administration.

In speaking of the management of *Hyperpyrexia* of pneumonia, Dr. Chapin[8] believes that it is important to avoid any measures that will secondarily have a bad effect, such as any of the cold tar derivatives; antipyrine and acetanilide, he thinks, should not be given under any circumstances. He believes that the application of water is a safe and most satisfactory method of controlling dangerous hyperpyrexia, especially in the treatment of pneumonia of children. He recommends first the application of cold to the head. Cracked ice placed in rubber bottles may be moulded to the head, especially at the vertex and occiput, or ice poultices made by mixing cracked ice with flax-seed meal, in oiled silk. Then, if the fever is not reduced by these means, he recommends the application of compresses directly to the chest. The child should be stripped, wrapped in a blanket, and placed upon a table, stimulants given, and the feet placed in contact

with hot bottles. A compress sufficiently large to surround the chest, plunged into water at a temperature of from 70° F. to 95° F., and applied to the chest. This to be changed every ten to fifteen minutes until the desired result is obtained. In order to expose the child as little as possible, the nurse is directed to apply the compress from the front, tucking in the ends until they meet in the back. If the fever does not yield, the temperature of the water can be lowered until it reaches 70° to 60° F., or even lower. The addition of about $\frac{1}{4}$ part of alcohol to the water increases the value of this compress. The deepened respirations ensuing upon the application of the compress, have a favourable effect upon the circulation, in pneumonia. Dr. Chapin rarely employs the tub in combating hyperpyrexia seen in children with pneumonia.

There appears to be a uniformity in the treatment of pneumonia at the present time in the large hospitals of New York. All clinicians believe that the rest in bed should be absolute. The patient should not be allowed to rise to have a movement of the bowels, but should use a bed pan. It is believed by many that setting a patient up in bed to examine his lungs does harm. The two drugs most extensively used are **Whiskey** and **Strychnine,** the latter being given in all cases of impending cardiac failure, preferably by hypodermic injection, $\frac{1}{30}$ of a grain every three or four hours. The amount of whiskey given, and the frequency of its administration, is determined by the condition of the patient. The majority of cases require $\frac{1}{2}$ an ounce of whiskey every three or four hours. **Digitalis** is used by some, and not by others. Those who believe in its efficiency generally give it when there is evidence of failure of the right heart, as shown by congestion of the lungs and blueness of the extremities. Morphine seems to be the most universally used drug at the present time for the relief of pain and to quiet the delirium and exhausting sleeplessness. Hypodermic injections of morphine, in $\frac{1}{8}$-grain doses, are usually given. Some believe in enveloping the chest on the affected side with poultices; others prefer the pneumonia jacket; a few the cold compress. There seems to be no uniformity in the local treatment of the chest.

Cold baths, when the temperature is high, are only used in a few of the hospitals, and only in exceptional cases. The diet generally consists of milk and broth.

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POST-OPERATIVE INSANITY. (See "Insanity.")

POST-PARTUM HÆMORRHAGE. (See under "Labour.")

PREGNANCY (Extra-uterine).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

During the last two years there has been much attention paid to the phenomena, clinical and pathological, of extra-uterine pregnancy. Conspicuously important was the exposition of the whole subject by J. W. Taylor[1] in the Ingleby Lectures for 1898, and to this we shall have frequent occasion to refer.

ETIOLOGY.—Bland Sutton[2] says that "fertilisation normally happens in the uterus, but when it occurs in the tubes it is accidental, and tubal gestation is the consequence." Taylor maintains that this simple explanation does not meet all cases, because there is evidence that spermatozoa normally enter the Fallopian tube, and that, consequently, "there is no evidence whatever for the belief that the seat of normal impregnation is *limited* to the cavity of the uterus, while the facts which are known concerning the invasion of the tubes by spermatozoa unmistakably point to the conclusion that normal fructification of the ovum may occur at any stage of its passage from the ovary to the uterus." He therefore considers that any want of development in the tube, any permanent contraction, swelling of the mucous membrane, abnormal length of the tube, extra weight or impaired mobility of the ovum at its entrance into the tube, failure of muscular power, or interference with the peristaltic action of the tube may increase the tendency towards a tubal instead of a uterine "settling of the ovum."

DIAGNOSIS.—Taylor summarises as follows the elements which go to form a positive diagnosis of extra-uterine pregnancy before and during those disturbances to its progress which are so common in the earlier months—the disturbance of intra-peritoneal bleeding and hæmatocele formation: "(1.) A patient within the child-bearing limits of age, and one in whom a pregnancy is possible: (2.) She has recently been in good health; (3.) It is more likely than not that several years have passed since her last pregnancy; (4.) There is a history of some amenorrhœa accompanied or followed by (5.) Irregular uterine hæmorrhage, dark in colour, moderate in amount, and persistent in its course; (6.) With this there may be the history of the passage of some membrane, either in one pouch or bag as a 'complete decidua,' or in two pieces, or in shreds; (7.) On examination pulsating vessels may be felt in the vaginal vault on one side of the uterus; (8.) On this side also, and closely investing the back of the uterus,

there is nearly always a tubal tumour (exceptionally this may have a different or curious situation) ; (9,) This tumour enlarges markedly and suddenly by recurrent hæmorrhages and by the formation of a hæmatocele directly continuous with the original tubal tumour ; (10.) These hæmorrhages are signalised by sudden spasms of severe abdominal pain and by transient attacks of peritonitis ; (11,) The uterus is displaced by the hæmatocele at first backwards, afterwards to the opposite side of the pelvis, and sometimes forward (against the pubes)—it is very rarely that the uterus is permanently displaced downwards ; and (12,) The uterus throughout, although slightly enlarged, may be proved to be empty."

At this stage there further remains the differential diagnosis from : (1,) Pyosalpinx, with amenorrhœa ; (2,) Myoma ; (3,) Simple abortion ; (4,) Retroflexion of the gravid uterus ; (5,) Anteflexion of the gravid uterus ; (6,) Twisted pedicle tumours (*a*,) of the tube, and (*b*,) of the ovary ; and (7,) Pelvic cellulitis. The writer has reported two cases[3] in which retroversion of the gravid uterus and pelvic cellulitis were simulated by tubal pregnancy.

Mayo Robson[4] says, in speaking of diagnosis, that in all the acute cases he has seen there has been no difficulty in making a diagnosis, the symptoms having been pathognomonic. These were, a sudden pelvic pain followed by faintness of varying degrees, even to extreme collapse ; the history of one, or perhaps two, missed periods, and usually the appearance of a slight metrorrhagia, with, at times, the passing of decidual membrane. On pelvic examination the uterus was usually found tilted over to the normal side, and a soft doughy swelling could be felt at the site of disease. The special symptoms to which he draws attention are :—

(1,) Superficial dulness on percussion over the pubes and in either flank, which on deeper percussion gives a resonant note.

(2,) A thrill in the same regions on gently flicking with the finger nail, though no ordinary signs of fluctuation can be felt.

(3,) A symptom which he believes has not been hitherto described. On turning the patient on to the side, the dulness in the flank then uppermost persists for some little time, but gradually disappears in a way which he has never found in the case of any other fluid than blood in the peritoneal cavity.

(4,) In one case related to him by his colleague Mr. Jessop, the liver dulness had entirely disappeared, apparently owing : (*a*,) To the liver having become diminished in size from the loss of blood ; and (*b*,) To the bowels having been pushed up by the effusion of blood in the pelvis.

In nearly all the cases there was dysmenorrhœa for some time before the catastrophe, and in several the pain of the pregnant tube led the patients to seek advice before rupture occurred.

PROGNOSIS.—Broadly speaking, we may say that the most dangerous forms of tubal pregnancy are early rupture, tubal abortion in which the blood is rapidly poured out, later rupture into the abdominal cavity, rupture of mesometric pregnancy, and interstitial pregnancy; whilst the less dangerous ones are tubal abortion characterised by "blood drip" (Taylor), allowing of limitation of the hæmatocele, and rupture into the broad ligament in its early stages. In some of the latter cases, where the broad-ligament hæmatoma is associated with death of the fœtus, no operation is required.

TREATMENT.—Thorn[5] believes that **Operative Interference** in extra-uterine gestation has been carried too far, his conclusions being based on one hundred and thirty-six cases, 70 per cent. of which recovered without operative interference. This is contrary to the experience and views of most authorities. Mayo Robson lays down the rule that where rupture has occurred into the broad ligament operation is not called for unless the hæmorrhage be very excessive, or unless, at a later stage, it ends in suppuration. In all other cases he recommends operation.

Chase[6] advises operation in the majority of cases, but points out that if some time has elapsed since the rupture, then the necessity for interference may not be imperative, and opportunity may be had to watch the development of the case to determine whether the mass enlarges, diminishes, or remains stationary—and from such data the rule of action will be formulated, according as the life of the ovum is or is not retained.

Surgical experience generally, and here in particular, confirms the truth that the risk of operation is far less hazardous than the continuation of the hæmorrhage, which may not cease until life is extinct.

Edgar[7] holds the same view; the one class of cases to which he thinks that the expectant treatment may be applicable being cases where rupture or abortion has resulted in the formation of a hæmatocele.

Taylor sums up the general question of operative interference as follows: "The treatment of extra-uterine pregnancy is essentially operative. This fact is set forth very strongly in the well-known assertion of Werth, who declares that 'ectopic gestation must be considered as a malignant new growth and therefore should be removed by operation at every stage of its development.' This is a sweeping assertion, and one or two exceptions must be made to it. For example, in the latter half of a tubo-abdominal or tubo-ligamentary

pregnancy, when no sign of danger is present, it may be better practice to wait for operation until a time at or about the usual period of delivery when the child is viable and strong than to operate earlier when the life of the child is certain to be sacrificed. Some surgeons have advised that we should go beyond this and wait for operation until after the death of the child so as to have, if possible, a less vascular placenta to deal with. For my own part, in all cases of later extra-uterine pregnancy with a living fœtus and without any special sign of imminent danger I would choose, whenever practicable, the most convenient date in the ninth month on which to operate. I would not wait for any sign of spurious labour, or seek after exact correspondence with the natural term, but I would endeavour to perform the operation under the best conditions for both lives concerned. Again, occasionally here and there a case of ruptured tubal pregnancy or of tubal mole with peri-tubal hæmatocele recovers without operation, and the fact must be recognised and dealt with. I have seen five or six cases of such recovery, and there could be no doubt of the genuineness both of the disease and of the recovery ; indeed, in one of these cases the rupture in the tube and the traces of the old hæmatocele were plainly visible on opening the abdomen some two years later. If my own experience can be regarded as at all general or typical this would give a proportion of about 5 per cent. of all cases observed which may be expected to terminate by process of natural recovery."

As to the choice of method, a distinction must be drawn, following Taylor, between : (1,) Operations in the earlier half of pregnancy ; and (2,) Later operations. (1,) In the first we must consider—operations for diffuse hæmorrhage and operations for localised tumour, either an intact pregnancy or hæmatocele ; and (2,) In the second division we shall have to deal mainly with the operative delivery of the mother at or beyond the period of term under tubo-abdominal and tubo-ligamentary pregnancy.

(1,) Operation for diffuse hæmorrhage may be required in : (*a*,) Early rupture of the tube ; (*b*,) Later rupture of the tube ; (*c*,) Intra-peritoneal rupture of broad-ligament pregnancy ; (*d*,) Rupture of a peri-tubal hæmatocele ; and (*e*,) Rupture of a tubo-uterine or interstitial pregnancy. The operation here will of necessity involve abdominal section. It will be an operation of emergency.

In localised hæmatocele and in intact extra-uterine pregnancy up to mid-term other methods of operation may be employed besides abdominal section, and we shall have to consider vaginal section under its two aspects of posterior and anterior cœliotomy, and also the

sub-peritoneal incision in cases of anterior tubo-ligamentary invasion. In true retro-uterine hæmatocele, in which the pouch of Douglas is itself distended with blood, **Posterior Vaginal Cœliotomy**—the direct opening of the pouch of Douglas from the vagina—is obviously the proper method of treatment, and no surgeon would probably dream of any other. Under this condition the operation is very simple.

Anterior Vaginal Cœliotomy, or, as it is sometimes called, anterior colpotomy, has been extensively used during recent years in the treatment of peri-tubal hæmatocele due to tubal pregnancy. The main objections to anterior vaginal cœliotomy as a routine method of treatment are the following: (1,) Occasional insufficient space for operative work; (2,) Frequent inability to remove thoroughly and cleanly all products of the misplaced pregnancy; (3,) Inability to wash out the abdomen satisfactorily; (4,) Inability to drain through the anterior opening; and (5,) Occasional inability to extract the uterus without injury, the uterus being enlarged and softened by the changes consequent on the associated pregnancy.

Operation at or near Term.—It has long been recognised that in these cases the extraction of the fœtus is easy; but the best way of dealing with the placenta has been a most anxious and difficult question. "When the fœtus is dead," says Bland Sutton,[8] "the operative risks are very small indeed, and do not exceed those of ovariotomy. In cases where the fœtus is alive and the placental circulation in full vigour the risks are greater than those of any other abdominal operation." It was formerly taught that no attempt should be made to separate the placenta when the child is living. But Taylor's valuable observations have placed the matter in a different light and given important practical rules for treatment by the distinction he has drawn between true tubo-abdominal pregnancy, in which the placenta is more or less connected with the Fallopian tube, and the rarer form in which there has been a late rupture of a broad-ligament pregnancy, and where, consequently, while the child is abdominal, the placenta is intra-ligamentary. Broadly, when it has a tubal attachment (in any of the three forms above described) the placenta should be removed; when it is intra-ligamentary it should be left. We cannot do better than reproduce Taylor's summary of the matter: "In tubo-abdominal pregnancy at term there is no difficulty in the removal of the child by an **Abdominal Incision.** The crux of the operation is the treatment of the placenta. If this be left, sooner or later it will almost certainly become septic and putrid, and I have come to the conclusion—contrary to the opinion I formerly held—that in all cases of true tubo-abdominal pregnancy it is wise to remove the placenta. A clear

idea of its probable relations and attachments will, I feel sure, do much to make this part of the operation easier and to rid it of much of its otherwise alarming features. Wherever the placenta is, there is the Fallopian tube, and it is from this it receives the greater portion of its blood-supply. As we have already seen, sometimes the placenta is still within the tube, absolutely surrounded everywhere by tube, and nothing can be easier than to ligature it off and ensure its complete removal without any loss of blood. When it is within the gestation-sac and mostly covered by reflexions of the amnion, accessory vascular attachments to the omentum or abdominal wall are first ligatured and divided, the placenta is slightly tilted up at the most accessible part of its circumference, and forceps are used to clamp its tubal attachments below. The placenta is then removed and the tubal attachments are subsequently ligatured. The most difficult and dangerous form of attachment is that when the amniotic membrane only lines the upper surface of the placenta and all its under surface is attached not only to the tube and broad ligament but also to the parts adjacent. Still in this case a modification of the plan already described will afford the best chance of success. Sometimes the deeper attachments (uterus and broad ligament) may be seized before separation by the fingers of an assistant. If not, the most accessible route to the under surface of the placenta is searched for and separation is begun. As soon as possible the tubal and uterine attachments are clamped by the lighter elastic forceps of Doyen, the placenta is peeled off, and two or three large sterilised pads are packed into the cavity from which the after-birth has been removed. Ligatures are applied to the broad ligament and tube, and, wherever it is possible by so doing to control the bleeding. Where these are useless packing with iodoform gauze will prove, I believe, the best alternative method for control of hæmorrhage. When this is necessary, if the original abdominal incision—probably mesial—be decidedly to one side of the placental site, it will be wise to finish the operation by making a secondary abdominal incision immediately above the gauze from which the packing may be readily removed some four or five days later. The very rare condition when the child is abdominal and the placenta intra-ligamentary belongs to a very different category. From a surgical standpoint this pregnancy remains tubo-ligamentary throughout and is governed by the same laws of treatment which apply to tubo-ligamentary pregnancy. And in tubo-ligamentary pregnancy there is no necessity for the operative removal of the placenta. If the sac be drained the placenta will itself separate and come away with the discharges ; this usually takes place without any pyrexia or constitutional disturbance. The

main indication in this form would be, as I believe, to convert the complex 'tubo-ligamentary-abdominal' pregnancy into a simple tubo-ligamentary one. After the fœtus has been removed this may, perhaps, be effected by sewing the laceration of the sac to the abdominal wound. If the opening in the sac be inconveniently situated for this the (divided) cord may be dropped inside the sac, the edges of the laceration turned in, and the abdominal opening in the sac closed by suture. Then either before or after closure of the abdomen a large opening is made by vaginal section into the most dependent part of the sac, the cord is drawn down into the vagina, and the rest of the wound and the lower part of the sac are plugged with iodoform gauze."

Combined Extra- and Intra-uterine Pregnancy.—This is a rare and grave complication. Thirty-seven cases had been recorded prior to 1890 (Royster), and since then eight cases are mentioned in the "Index Medicus." A recent instance is reported by Miller.[9] He was called to a patient for a miscarriage; a three and a half months' fœtus had been expelled. He passed his finger into the uterus and removed the secundines. Four hours later the patient was seized with violent pain and vomiting, followed by collapse, and she died in two hours. Necropsy revealed a ruptured Fallopian tube on the left side, and among the bloodclots in the pelvis was a fœtus three and a half inches long.

Repeated Ectopic Pregnancy in the same Patient.—This occurrence is even rarer than the preceding. Schoolfield,[10] however, reports two cases. Two further cases have been recently reported, one by Edgar[11] and one by Ferguson.

REFERENCES.—[1] "Lancet," May 28, and June 4, 18 and 25, 1898; [2] "Dis. of Women," by Sutton and Giles, p. 229; [3] "Obst. Trans.," 1897; [4] "Med. Press and Circ.," Jan. 26, 1898; [5] "Therap. Monats.," Jan. and Feb., 1899; [6] "Brooklyn Med. Journ.," Feb., 1898; [7] "Glasgow Med. Journ.," Oct., 1897; [8] "Dis. of Women," by Sutton and Giles, p. 410; [9] "New Orleans Med. and Surg. Journ.," Oct., 1898; [10] "Amer. Journ. of Obst.," March, 1898; [11] "Edin. Med. Journ.," July, 1899.

PROSTATE GLAND (Disorders of). *E. Hurry Fenwick, F.R.C.S.*

Hypertrophy treated by Operation upon the Adnexa.—Albarran and Motz,[1] concluding a long article on this subject, state that it is rational to admit *a priori* that castration diminishes hypertrophy of the prostate, especially when the hypertrophy is of the glandular form; that although the anatomico-pathological evidence is still inconclusive, clinical experience shows that there is a marked diminution of the enlargement of the prostate after castration. This diminution is due

at first to relief of the congestion, later to true atrophy. This atrophy may be very slow, and may not begin for six months or even more after operation, and may progress for more than two years. It may advance to such a state that the prostate may not be felt by rectal palpation. Certain portions of the enlarged organ may atrophy, and this process may affect the lobe which projects into the bladder. It is not possible to assert at present that all enlarged prostates will atrophy after castration, nor can it be said to what extent this atrophy will progress. It is even probable in certain cases there may be no atrophy. As to the effect of castration on the bladder in prostates with dysuria without retention of urine, and in whom the contractility of the bladder is preserved, patients suffering chiefly from frequency of micturition due to congestion of the prostate and bladder, the operation is followed by a rapid improvement of vesical symptoms due undoubtedly to relief of congestion. In prostatics suffering from retention of urine, the results are truly remarkable.

The authors find that out of one hundred and twenty-four cases, the mortality was 14·5 per cent., due in the main to antecedent infection of the kidneys. Contrasting this mortality with that of the prostatics received in the Hospital Neker, and not submitted to operation, the authors find that the figures stand at 14 per cent., *i.e.*, thirty-one deaths in two hundred and twenty cases. Operation is in itself not grave, and the mortality could be reduced to nothing by a proper selection of cases.

Angio-neurotomy of the Spermatic Cord in Prostatic Hypertrophy.—Albarran and Motz[2] detail their observations on six patients affected by hypertrophy of the prostate, and in whom the operative measure of section of the nerves and vessels of the spermatic cord, bilaterally, was employed, as an alternative to castration. In every instance recounted the results were favourable. Retention of urine was relieved often immediately after operation. Cystitis and hæmorrhage, if present, were diminished or abolished, while the volume of the prostate gland was in the majority materially reduced. While the authors claim that their method appears to be equally as efficacious as that of castration, they are fully prepared to subject it to the test of further investigation, and that notwithstanding the fact that they have taken pains to follow their cases for several months.

Operative Treatment of Prostatic Hypertrophy.—Hoffman,[3] of Breslau, records that in Prof. Mikulicz's clinic twenty-four cases of prostatic hypertrophy have been treated by some one of the "sexual operations," viz. :—

(1,) Castration (two cases) : no result ; one death from pyæmia.

(2,) Ligation of the spermatic cord (three cases): one improvement; two unimproved; one death from hypostatic pneumonia.

(3,) Section of the spermatic cord (two cases): both improved.

(4,) Resection of the vasa deferentia (seventeen cases): six improved, though in four cases only very slightly; eleven unimproved, of these three died, five, twelve and thirty days respectively after operation.

Such a mortality, contrasted with the slight improvements to be obtained from these operations, should certainly very materially restrict the indications for their performance. The results of treatment are based, not on the immediate observations following operation, but on later reports which show a very different and much less brilliant result. The happier sequelæ immediately following operation are considerably influenced by the subjective conditions, the patient being materially influenced by the prospect of relief. Unconsciously the surgeon is apt to be likewise influenced in noting slight changes in the volume of the organ. Many cases of improvement are undoubtedly due to the rest in bed, systematic nursing, and treatment of the cystitis.

The results here given compare most unfavourably with reports in general. The explanation may, perhaps, be sought in the lateness of the after observations, or perhaps, in the unusually bad features presented by this particular group of cases. It is to be noted, however, that the material includes a considerable number of what are usually considered the more favourable cases, relatively younger subjects with succulent prostates and symptoms of short duration.

Supra-pubic Cystostomy for Prostatic Enlargement.—Prof. Poncet,[4] of Lyons, gives evidence of his bias for the above method of interference, in troublesome cases of enlarged prostate, in recording one hundred and fourteen operations which he has performed during the last ten years. The steps of the procedure are the same as in supra-pubic cystotomy, excepting that inasmuch as the aim of the surgeon is to establish a permanent outlet for the urine, the edges of the wound in the bladder are stitched whenever possible to the edges of the wound in the abdominal wall. Besides tending to secure greater permanence of the opening, this counteracts the retraction of the edges of the wound in the bladder, which is usually considerable, and lessens the risk of infiltration of urine.

Poncet recommends the operation: (1,) In those cases of enlarged prostate in which there is a mechanical and more or less insurmountable difficulty in urinating, and in which catheter life is impossible, from whatever cause. Poncet prefers cystotomy to the use of the

aspirator, or to the tying in of a catheter; (2,) In cases in which septic infection is the prominent feature, and is the source of danger to the patient, where cystitis persists in spite of skilful catheterisation and irrigation of the bladder. The mortality is shown in the following table :—

CLASS I.—Cystotomy for mechanical difficulty, without appreciable urinary infection: Cured, thirty-seven; died, two.

CLASS II.—Cystotomy in infected cases, with lesions in kidney, etc: Cured, fifty; died, twenty-five.

The mortality will be seen to depend, not upon the operation *per se*, but upon the conditions for which it is performed. The state of the kidneys bears about the same relation to the mortality in operations on the bladder, as the state of the intestine in operations for strangulated hernia.

Regarding the later functional results of cystostomy, it was found that in thirty-four cases, seen from six months to seven and a-half years after the operation, there existed what may be described as an artificial urethra, possessing a vesical orifice and a skin orifice, and a channel from 3 to 6 cms. in length, lined with mucous membrane, and surrounded by a fibro-elastic ring. Of these thirty-four cases, fourteen had perfect continence, seven incomplete, while thirteen were incontinent. In the first group there were patients who could retain their urine for three or four hours, who never passed a drop by the penis, and who, on emptying the bladder by the fistulous opening above the pubes, could project the stream for a yard or more and never wet their clothes. Those with incontinence had to put up with the inconvenience of an urinal.

The Treatment of Vesical Obstruction incident to Enlarged Prostate by Galvano-Cautery Incisions.—It was about twenty-five years ago that Bottini proposed to overcome the obstruction due to an urethral or vesical enlargement of the prostate by forming an artificial channel through the obstructing mass by means of a knife heated to the cauterant point by electricity. The proposal received, till recently, but scant recognition.

Meyer[5] states some reasons for the favour with which Bottini's modified operation is now received :—

(1,) The efficiency and comparatively moderate cost of the appliance.

(2,) The lessened danger of infection because of a more thorough knowledge of urethral antiseptics.

(3,) The modification of the operation in such wise that in place of forming an artificial groove or tunnel, deep cautery cuts are made in

various directions, causing the prostate to shrink, and thus enlarging the natural opening.

Meyer states that a tabulation of one hundred and sixty-four cases shows that eighty were cured, forty-four were improved, twenty-six were not improved, and fourteen died.

Meyer holds that the risk of this operation is less in small, comparatively avascular prostates associated with normal bladders and upper urinary tracts. As a result of his operations he is ready to advise every patient with non-complicated prostatic enlargement to submit to the galvano-cautery treatment as soon as resort to continued self-catheterisation has become imperative.

Primary Malignant Disease of the Prostate Gland.—Hurry Fenwick[6] contributes a paper on this subject, giving a clinical study of the first fifty cases which have been under his care and observation. There is no practical value in grouping malignant disease of the prostate according to the microscopical character of the growth. Two great groups will embrace all the instances that are met with, and these two divisions will differ most markedly in their symptomatology, prognosis, and treatment.

(*a*,) The hard malignant growth, which to the touch and to the eye on section, and in its rate of progress, is like mammary scirrhus.

(*b*,) The soft malignant growth, a much rarer form, which resembles in the rapidity of its growth, and in the naked-eye appearances, mammary "encephaloid cancer." Between these two groups a mixed form is occasionally encountered, neither densely hard nor very soft, and partaking of the clinical character of both groups.

(*A*,) *Primary Hard Malignant Growth of the Prostate.*—There are three pronounced stages in the development of a hard malignant growth starting primarily in the prostate gland.

The first stage—Tactile recognition. The finger detects, per rectum, a distinct hardness, often like a buried stone, in one or other prostatic lobe (71 per cent. of the author's cases started in one lobe). This lump does not project at first, being buried in the substance of the lobe; its ill-defined edge shades off imperceptibly into the unusual denseness which can be detected around it. It reminds one of a stone felt in a half-ripened plum. The other lobe was, in the above percentage, soft and healthy. Soon, however, the latter becomes dense, almost like wood, but still the interlobular sulcus is maintained. As time goes on, the finger recognises the increase in the tension of the prostatic capsule, until, like glaucoma, it increases to a condition of extreme tension.

Clinical Evidences.—The onset of the disease is (in 60 per cent. of

the author's cases) marked by frequent micturition, by loss of stream-power, by straining to empty the bladder. These are the usual onset symptoms, but the patient may have allowed the initial symptoms to pass unnoticed, and the first which has forced itself upon his attention may have been an attack of retention (16 per cent.)—very rarely is incontinence the onset symptom (4 per cent.). As these symptoms arise at the "prostatic" age (fifty to sixty), and as they are the same as those caused by the obstruction of the "enlarged prostate," the benign disease is often mistaken for the malignant.

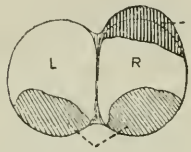

Fig. 29.—Prostate of G.M., taken Oct. 2, 1897.

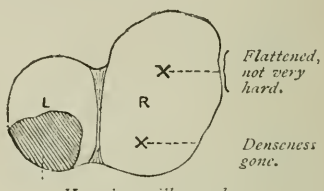

Fig. 30.—Prostate of G.M., Nov. 13, 1897.

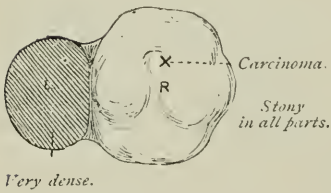

Fig. 31.—Prostate of G.M., Nov. 5, 1898.

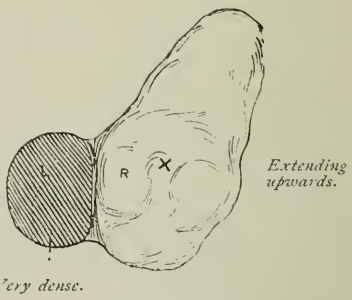

Fig. 32.—Prostate of G.M., January, 1899.

The second stage.—(A latent period due to capsular rupture.) Just when the sense of obstruction and urgent frequency of micturition are most distressing, there suddenly appears in many instances a "lucid interval." A sudden relief of all the symptoms is experienced, a release from actual pain, which is paralleled by the subsidence of suffering induced by tension in other fibrous capsules, *e.g.*, acute glaucoma, acute testitis, when the pressure is suddenly removed. The lucid interval is due to the capsule of the prostatic lobe giving way. This occurs usually at its posterior aspect and base, just where it joins the adjacent vesicula seminalis. On rectal

examination the dense, stony-hard prostatic lobe is found flattened, but elongated towards and apparently fused with the corresponding seminal vesicle. Such is the intermediate stage between tension and extension of growth. It occurs only in the very hard forms. The four diagrams (*Figs.* 29, 30, 31 and 32) illustrate the above-related points.

The site of the capsular rupture is nearly always towards the angle which the base builds with the posterior surface of the lobe. The harder and more indolent the growth, the more delayed will be the appearance and the more protracted the duration of the latent period. The softer forms invade and soften the capsule, which gives way so gradually as not to be noticeable. There are two unfailing symptoms of the supervention of this rupture and extension. These are rapid emaciation and the appearance of obstinate sciatic nerve pains.

The third stage.—This is a period marked by rapid emaciation, by involvment of chains of the pelvo-abdominal lymphatics and glands, and by the effects of the pressure of the latter upon nerves and vessels; also by unilateral renal pain, due to throttling of the ureter by the encircling growth, this occurring usually on the side on which the growth first appeared. The hæmorrhage which occasionally appears in the third stage may be profuse; it marks the invasion of the mucous membrane of the bladder base, usually on the side on which the growth first appeared in the prostate. It generally indicates a septic termination to the case. Agonising spasms indicate the spread of the hard growth between the muscular planes.

The preceding remarks apply only to hard malignant growth arising in the "virgin" prostate. When carcinoma attacks a chronically-inflamed prostate, it has no typical clinical course, no tactile characteristic beyond a dense indurated mass. Such a case must be grouped as obscure, and must be deciphered on other grounds than its history. It must also be borne in mind that a prostate enlarged by old age, hardened by inflammation, and fretted by the presence of seed calculi, is of all prostatic diseases most nearly akin in clinical features to carcinoma.

TREATMENT.—*Therapeutic.*—The frequency and straining by which the first stage is characterised, are perceptibly relieved by **Belladonna** and **Conium.** They are best administered by the bowel as suppository. Nux vomica, which is of such signal benefit in the earlier stages of the "hypertrophied" prostate, is generally contraindicated in hard carcinoma. This is perhaps more especially the case when the growth has invaded the muscular planes of the bladder base, for it aggravates spasm and induces a wooden-like priapism of a particu-

larly painful character. The patient depends greatly upon free and daily clearance of the bowel.

Morphia should be kept, as far as possible, for actual pain of nerve pressure. It is worth while trying the modern anti-neuralgic drugs, to combat those distressing nerve pains in the lumbar, perineal, and sciatic regions, which are the result of direct pressure of the infiltrated glands upon the nerve trunks or branches.

Instrumental Treatment.—The employment of the catheter is usually a matter of judgment. In 16 per cent., however, of cases retention exists, and the use of the catheter is imperative; a soft rubber (Jacques), or a silk web catheter is passed much easier than a silver, the pliant instrument finding its way round the corners of the irregular urethra easily.

The degree of relief obtainable by the catheter depends upon the amount of residual urine removed.

Irritability of the bladder is in this disease the outcome of two independent factors, either or both of which may be present. It may be due to the atony of obstruction, in which case the residual is large; or it may be caused by the physiological effects of irritation of the growth invading the mucous membrane of the prostatic urethra or bladder neck, in which case slight hæmorrhages appear early in the case, and the residual urine is small in amount.

If 8 to 10 ounces of residual are removed, the patient may be promised relief. If only a small amount (1 or 2 ounces) are found, the case will be most unfavourable, and probably necessitate supra-pubic drainage to give the patient relief from the frequent agony of micturition, which is much increased by carcinomatous urethritis. Supra-pubic drainage is also called for in those cases in which great spasm of the detrusor is excited by intra-muscular growth.

The only perineal operation permissible is prostatic capsulotomy, to relieve extreme tension, and this latter is only substituting one line of extension for another. Colotomy is very rarely needed, for rectal obstruction, due to extension of the disease to the walls of the bowel, is unusual.

Prognosis.—The duration of life in primary hard malignant growth of the virgin prostate, from start to finish, lies within three years. The termination of the case is either due to ascending septic changes in one kidney, or asthenia; the former is probably the commoner. In rarer cases the rectum is affected, and obstruction ensues.

(*B*,) *The very soft Malignant Type.*—This is a rare condition, only six cases in fifty being encountered by the author. In all, the growth was extremely rapid, and the first indication of its presence was

rectal obstruction or retention. The growth in each case was found to be enormous, the finger entering the rectum with difficulty, and in two cases plunging at once into a soft, bleeding, pulpy mass on the anterior wall. On three occasions the author performed colotomy within a few weeks of the symptoms. Such cases generally die quickly of septicity. They are generally diagnosed as prostatic abscess at the outset.

Seminal Vesiculitis and Prostatitis (Post-gonorrhœal).—Dr. George Knowles Swinburne[7] gives his conclusions as follows :—

(1,) If a condition of the prostate and seminal vesicles be found in patients who have never had gonorrhœa, which seems to be of a catarrhal nature, which may or may not give rise to symptoms, these symptoms, if present, are apt to be neurasthenic in character, and are benefited by local massage.

(2,) In chronic urethritis and at the end of prolonged urethritis, or where the posterior urethra has become invaded, the seminal vesicles and prostate should always be examined.

(3,) Where epididymitis has occurred, seminal vesiculitis is very apt to exist also. This, however, may clear up spontaneously.

(4,) Tubercular processes should, if possible, be excluded, for massage is apt to render their condition worse.

(5,) Where live spermatozoa are found by stripping after the urine has stood for some time, it is a good sign that the mucous membrane of the seminal vesicles secretes the proper fluid for preserving the life of the spermatozoa.

(6,) Stripping the seminal vesicles is a good method of testing for sterility, as it shows whether the ducts between the testis and seminal vesicle of corresponding side are patent. It may, however, fail.

(7,) It is as necessary to train the finger in making an examination of this condition as in making a vaginal examination.

(8,) Sometimes at the beginning of treatment nothing, or but little material will be expressed. If the treatment be continued more and more material will be expressed.

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PRURITUS. *T. Colcott Fox, M.B.*

Wilmott Evans,[1] after discussing the value of **Baths** in the treatment of pruritus, enumerates the following preparations as valuable :—

Of all lotions, those containing **Carbolic Acid** are the most useful.

and the best strength is 1 of the acid to 60 of water, or the sedative action of alkalies may be added, as in the following prescription :—

℞ Acidi Carbolici Liquefacti ʒj | Aquæ ad ʒx
Liquoris Potassæ ʒss |

Misce, fia lotio.

Or **Borax** may be combined with the carbolic acid, as in this formula :—

℞ Acidi Carbolici ʒj | Aquæ ad Oj
Sodii Biboratis ʒj |

Misce fiat lotio.

The other lotions are numerous which have been employed in the treatment of pruritus, but few of them need be mentioned. Dilute acetic acid, or vinegar mixed with an equal quantity of water is useful ; as is also a weak solution of **Chloroform** in alcohol and water, as in this prescription :—

℞ Chloroformi ʒj | Aquæ ad Oj
Spirit. Vin. Rect. ʒx |

Misce, fiat lotio.

Various lotions containing **Lead** may be used, as :—

℞ Liq. Plumbi Subacetatis ʒij | Aquæ ad ʒx
Glycerini ʒss |

Tar Lotions, especially if alkaline, may prove beneficial, though the staining of the clothes which may result from its use, and its marked odour, are often objected to by the patient. The following is a convenient formula :—

℞ Liq. Picis Præparati ʒij | Spirit. Vin. Rect. ad ʒij
Liq. Potassæ ʒiij |

Of this, 2 or 3 drachms may be mixed with a pint of water.

Lotions are certainly preferable if the extent of skin affected with itching is very large ; but if the area is small, an ointment is a much more convenient preparation.

An ointment containing **Carbolic Acid** is perhaps the most useful ; it may be compounded as follows :—

℞ Acidi Carbolici gr. v ad gr. xxx | Unguenti Zinci ʒiv
Unguenti Paraffini ad ʒj

Fiat unguentum.

Immediately after carbolic acid he would be inclined to place **Ichthyol,** and it is especially useful if the part is inflamed. A very convenient ointment is that in the following prescription :—

℞ Ichthyol. ʒss ad ʒiij | Unguenti Paraffini ad ʒj
Pulv. Calaminæ ʒij |

Misce, fiat unguentum.

Resorcin is also very useful in some cases, and may be prescribed as follows :—

℞ Resorcini gr. xv ad ʒj | Unguenti Paraffini ad ʒj
Zinci Oxidi ʒss |
Misce, fiat unguentum.

Beta-naphthol can be used as an ointment as follows :—

℞ Beta-naphthol. gr. xx | Unguenti Paraffini ʒj
Misce, fiat unguentum.

Ointments containing **Mercury** are often of value, but they should never be employed when a large surface of skin needs to be treated, for the risk of mercurial poisoning is by no means small. The following formulæ are suitable :—

℞ Hydrarg. Ammoniati gr. xxx | Paraffini Mollis ʒv
Pulv. Zinci Oleatis ʒj | Paraffini Duri ad ʒj
Misce, fiat unguentum.

℞ Ung. Hydrarg. Nitratis dil. ʒj | Unguenti Paraffini ad ʒj

REFERENCE.—[1] "Treatment," 1899.

PRURITUS AND PRURIGO.

T. Colcott Fox, M.B.

Savile[1] says that, for the purpose of treatment, cases of pruritus may be divided into two classes : those, on the one hand, which are dependent upon some eruption or local condition (such as the presence of parasites or an irritating discharge), and which are, for the most part, localised in their distribution to some limited region of the body ; and those cases, on the other hand, which are general in their distribution, and which are either unaccompanied by an eruption, or if so accompanied, the eruption is secondary to the pruritus and has well-defined characters (prurigo). Our object in the first group should be to remove the local condition upon which the itching depends, but this may itself involve any or all the considerations upon which the treatment of skin diseases depends. The second group have their origin in disorder of other organs, as in diabetes and jaundice, and act on the skin possibly by way of the blood current or nervous system, and tend to be generalised in their manifestations. Savile applies the term "Prurigo" to such generalised states of itching when associated with the appearance of papules or erythematous blotches and scratch-marks. Whether, however, prurigo is thus simply a phase of reaction arising from the scratching of an itching skin, or whether it is an eruption *sui generis* setting up intense itching is a vexed and difficult question. Savile strongly recommends the administration of **Chloride of Calcium**, in doses of not less than 20 grains three times daily, administered after meals in a wineglass of water with the taste masked

by a drachm of tincture of orange peel and an ounce of chloroform water. For a child of two years old a beginning may be made with 5 grains four times daily; but Savile confesses he has not been very successful with this remedy in lichen urticatus (prurigo infantilis). It is essential for the success of the remedy, he says, to relieve dyspepsia.

Lavallée[2] reviews the causes and treatment of pruritus, and mentions as "antinervines" such drugs as valerian, bromides, asafœtida, the tinctures of belladonna and aconite and gelsemium. Other internal remedies are hamamelis, digitalis, ergotine, quinine, and pilocarpine, opium and chloral. In *Senile pruritus* the following prescription may be used :—

℞	Bromide of Potassium	ʒij	Acetate of Sodium	ʒj
	Iodide of Sodium	ʒj	Infusion of Gentian	ʒiv
	Salicylate of Sodium	ʒij		

Two teaspoonfuls in water after each meal.

At night hot lotions may be applied to the body in the form of a 1 in 2000 solution of corrosive sublimate, carbolic acid in the strength of 1 in 20, or the salicylate of bismuth with 10 to 20 per cent. of powdered starch; or the following ointments may be advised :—

℞	Menthol	grs. v	Salicylic Acid	grs. xxx
	Guaiacol	ʒjss	Lanolin	ʒj

Or,

℞	Carbolic Acid	ʒj	Glycerin	ʒss
	Hyposulphite of Sodium	ʒj	Distilled Water	ʒx

Or,

℞	Vinegar Water	ʒj	Glycerin (with or without	
	Ichthyol	ʒj	Menthol)	ʒj

In some cases a 2 per-cent. solution of **Permanganate of Potassium** is useful, followed by an application of **Oxide of Zinc.** Where the pruritus is limited to a small area we may use menthol, 30 grains; alcohol, 6 drachms; and ether, 6 drachms, or menthol may be used in chloroform to the point of saturation. In other cases we may give :—

℞	Cherry-laurel Water	ʒij	Chloroform	gtt. v
	Chamomile Water	ʒj	Corrosive Sublimate	grs. iij to iv
	Alcohol	ʒj		

Or,

℞	Cocaine Hydrochlor.	grs. xlv	Cherry-laurel Water	ʒij
	Chloral	ʒj	Distilled Water	Oj

Parisat[3] employs the following treatment : The bowels are kept well open, and the patient is put on a milk diet, and **Benzo-naphthol** is prescribed (the total daily quantity being 2 grammes). Within twenty-

four hours improvement is noticed, and the most obstinate cases are rapidly cured.

For *Pruritus of the anus* laxatives may be used or **Rectal Injections** of very hot or very cold water may be employed, and just before retiring a 1 per-cent. **Chrysarobin Suppository** may be introduced into the bowel. In other cases relief is obtained by making a local application of **Nitrate of Silver,** in the strength of 1 to 20, every three days.

F. C. Wallis [4] has found in cases of *Pruritus ani*, which resist every form of treatment, that in at least 25 per cent. there was between the two sphincters, in the middle line posteriorly, sometimes anteriorly, a small superficial ulcer. The treatment consists in stretching the sphincter and scraping the ulcer; sometimes he divides the external sphincter. If the patient will not lie up, he passes a speculum, and injects a 4 per cent. solution of eucaine, or uses it as a wash, to render the part anæsthetic, and applies pure lactic acid. The patient is to wash the rectum out with boric solution night and morning, and after defæcation.

For the treatment of *Pruritus of the scrotum* a very hot solution of **Corrosive Sublimate,** or **Carbolic Acid,** may be applied on a compress and this enveloped in rubber dam. For *Pruritus of the vulva* the following may be used :—

℞	Hydrate of Chloral	℥j	Distilled Water	℥iv
	Rose Water	℥iij		

Or,

℞	Morphine Hydrochlor.	grs. vj	Borate of Sodium	℥ij
	Cherry-laurel Water	℥j	Chloroform Water	Oj

Or the following ointment may be used :—

℞	Bromide of Potassium	grs. xxx	Calomel	grs. vij
	Salicylic Acid	grs. vij	Glycerole Starch	℥vj

Before retiring for the night it is well to apply and maintain in contact with the vulva **Hot Poultices** of linseed which has been moistened with boric acid water. In other cases a strong solution of **Nitrate of Silver** is to be applied :—

℞	Nitrate of Silver	grs. xv	Distilled Water	℥ij

Internally in pruritus vulvæ, if it be associated with a neurosis, sleep is to be obtained by a mixture of bromide of ammonium, chloral, and syrup of orange flowers, or by the use of sulphonal and antipyrine. **Injections of Lysol** and **Corrosive Sublimate** are also of value to prevent vaginal discharges from irritating the vulva. Pruritus of the palm of the hand is to be relieved by remedies similar to that applied to the scrotum.

For the itching of jaundice, Boulland[5] uses **Ichthyol** in the following form :—

℞ Ichthyol 2·5 to 5·0 | Ætheris 25
Spirit. Vin. Rect. 25 |
M. Ft. lotio. To be used externally.

REFERENCES.—[1] "Treatment," Dec. 22, 1898; [2] "Therap. Gaz.," from "Rev. thérap. méd. chir.," Sept. 15, 1898; [3] "Wien. med. Presse," March 19, 1899, p. 476; [4] "Clin. Journ.," Jan. 11, p. 124; [5] "Therap. Monat.," Jan., 1899, p. 64.

PSORIASIS. *T. Colcott Fox, M.B.*

Dr. Karl Herxheimer[1] treated twenty-eight cases of *Psoriasis* with **Intravenous Injections of Arsenic,** and obtained cures even without local applications. The average duration of treatment was about forty-eight days. The initial dose of **Arsenious Acid** was $\frac{1}{100}$ grain, which was increased daily by about $\frac{1}{100}$ until $\frac{1}{10}$ grain was reached, this last remaining until the final disappearance of the efflorescence. The forearm being compressed by an Esmarch bandage, the prominent veins about the elbow were utilised. Herxheimer recommends an intermittent prolonged treatment to prevent recurrences.

Cacodylic Acid, an odourless, crystalline compound, soluble in water, containing 54·4 per cent. of metallic arsenic, communicating a garlic-like odour to the breath when administered internally, and **Cacodylate of Sodium,** have been given further trials in skin diseases and especially in psoriasis. Gautier hoped great things from it in tuberculosis, and Danlos reported good effects in psoriasis. It is looked on as possibly a means whereby high and prolonged doses of arsenic could be given; but the results, on the whole, are not very striking. Gijselman,[2] however, found hypodermic intramuscular injections of service. The following formula is used: Saturate 5 grammes of cacodylic acid with carbonate of soda; add 0·08 gramme of hydrochlorate of cocaine and 5 drops of a solution of creasote (creasote dissolved in 8 grammes of alcohol); make up to 100 c.c. with boiled distilled water, and use 1 c.c. of this (5 c.grms. of cacodylic acid) for an injection. Rille[3] also used cacodylate of sodium in pills and hypodermic injections (4 grammes of the salt to 10 c.c. of distilled water in a Pravaz syringe daily). A patient was cured of psoriasis after twenty injections; three others received fifty injections. No amelioration took place in cases with orbicular geographical plaques. A case of lichen ruber was cured after fifteen injections. Like iodide of potassium and iodothyrine, it seems most active in acute cases.

We may remind our readers of Mr. Jonathan Hutchinson's favourite treatment :—

℞	Acid. Chrysophanic	grs. x	Hyd. Amm. Chlorid.	gr. x
	Liq. Carbonis Deterg. (Wright's)	♏ x	Adip. Benzoat.	℥j

M. Fiat Unguentum.

The patient is to remove all scales as far as possible by washing or a warm bath, and to spend half-an-hour in rubbing the ointment into all patches. It is better to leave the ointment on all night, but if this is too disagreeable it may be wiped off (not washed). In the morning a bath with soap is taken. In most cases he prescribes arsenic also, but he relies chiefly on the ointment and sometimes uses it alone. The tar solution materially prevents staining. With perseverance relapses become slighter and slighter and the intervals longer.

Paul Richter's [4] formula for an ointment is as follows :—

℞	Acid. Salicylic	3 parts	Olei Olivæ	10 parts
	Acid. Pyrogallic	3 parts	Adip. Lanæ	to 100 parts
	Ammon. Sulpho-ichthyol	3 parts		

C. Rasch [5] painted each spot of psoriasis twice daily with a 2 per cent. solution of **Potassium Permanganate.** He used this treatment in fourteen cases of psoriasis with varying success. In some cases the disease disappeared in two or three weeks, while in others the applications seemed to have hardly any effect. In one case twelve applications were sufficient to effect a cure, while in another, although the eruption disappeared after thirty applications, a fresh attack of psoriasis soon followed.

Schütz [6] has observed three cases of psoriasis in which there existed at the same time a marked leukoplakia oris, and he thinks the coincidence not purely accidental. W. J. Munro [7] comes to the astonishing conclusion that the primitive lesions of psoriasis are miliary abscesses of the epidermis, situated almost upon the surface of the corneous layer, and that around these the epidermic reaction produces a secondary hyperkeratosis. He failed to find a specific micro-organism.

With regard to *excessively prolonged arsenical treatment* we note that Hartzell [8] has recorded another case of keratosis and epithelioma as a probable sequel.

REFERENCES.—[1] "St. Petersb. med. Woch.," 48, 1898 ; [2] "Wien. klin. Woch.," No. 14, 1899 ; [3] "Vienna Soc. of Derm.," March, 1898 ; [4] "Monatsh. f. prakt. Derm.," Oct. 1. 1898, p. 342 ; [5] "Hospitalstidende," 1893, No. 41 ; [6] "Arch. f. Derm. u. Syph.," Band xlvi, Heft 3 ;" [7] "Ann. de Derm. et de Syph." 1898, No. 11 ; [8] "Amer. Journ. Med. Sci.," Sept., 1899.

PTOSIS. *F. Richardson Cross, M.B., F.R.C.S.*

Darier[1] (Paris) has performed a modification of Panas' operation for ptosis, the object of which is to replace by a muscular connection the skin flap of the original operation. An oval piece of skin, 3 mm. in greatest breadth, is first excised along the whole length of the lid, leaving the fibres of the orbicularis intact beneath. Two flaps are then cut in this muscle, and an incision is made in the eyebrow parallel to that in the lid. The skin is dissected downward to join the two incisions, and the two muscle flaps are drawn up and sutured to the upper border of the incision in the brow, their other ends being finally sutured to the tarsus and to the lower edge of the original incision in the eyelid.

REFERENCES.—[1] "Trans. Ophth. Soc.," Heidelberg, 1897; "Ophth. Rev.," Nov., 1898.

PUERPERAL ECLAMPSIA. (See "Labour.")

PUERPERAL SEPTICÆMIA. (See "Labour.")

PUPIL (Drugs Acting on). *F. Richardson Cross, M.B., F.R.C.S.*

Further experience with **Arecoline Hydrobromide** shows that its action is very prompt and powerful, and probably superior to that of any other myotic. At the same time it should be remembered that its effects are transient, seldom lasting for more than an hour. While, therefore, its use is indicated in glaucoma, or under conditions requiring rapid and immediate contraction of the pupil, it should, in the after treatment, be associated with eserine or pilocarpine in order to ensure continuous myosis. The drug is of little value to prevent prolapse of the iris after simple extraction of cataract or other operations or wounds where this complication threatens.

Hinshelwood[1] states that a 5 per. cent. solution of **Euphthalmin** causes rapid dilatation of the pupil, together with a transient paralysis of accommodation. The degree of paresis of accommodation is also less than that produced by any other of the mydriatics in common use. There appears to be absolutely no local irritation, no toxic symptoms, and no increase in the intra-ocular tension caused by it. Maximum dilatation of the pupil is produced by euphthalmin in about twenty minutes; this is maintained for about the same period, after which the effect gradually passes off, and the pupil regains its normal condition in about three hours. These results have been confirmed by Mr. Cridland, in the Bristol Eye Hospital, the transient nature of the mydriasis being very marked, even when a 10 per cent. solution of the drug is used.

REFERENCES.—[1] "Brit. Med. Journ.," 1899, ii, p. 774.

PUPIL (Impairment of Function of).

F. Richardson Cross, M.B., F.R.C.S.

Leszynsky[1] discusses the clinical and pathological significance of unilateral loss of the pupillary light reflex. This symptom has also been called "unilateral reflex pupillary rigidity," "unilateral reflex iridoplegia," and "unilateral Argyll-Robertson pupil." It consists in an ocular condition in which one pupil does not react directly to light, while its reaction in convergence is maintained. The affected pupil may be either dilated, contracted, or of the same size as the other pupil, and its consensual reaction is usually lost. The symptom is unaccompanied by any interference with vision or apparent lesion of the fundus, and the pupillary reactions of the other eye are normal.

The results of Leszynsky's investigations lead him to the following conclusions :—

(1,) That unilateral reflex iridoplegia is a condition which may arise in tabes or paretic dementia, being confined to one side for an indefinite time before the other pupil becomes similarly affected.

(2,) That it is also found in cerebral syphilis, and may be permanently limited to one eye.

(3,) That it often occurs as a remote result of disease of the third nerve or its nucleus, and may be the only demonstrable clinical evidence of a pre-existing third-nerve paralysis.

(4,) That it is always indicative of central-nerve degeneration involving either the oculo-motor nucleus or its efferent branches.

(5,) That it is generally of syphilitic origin.

(6,) That the lesion producing unilateral reflex iridoplegia is situated in the centrifugal portion of the reflex mechanism.

Carra[2] relates a case in which unilateral dilatation of the pupil, giving rise to dazzling and headache, but unaccompanied by any impairment of accommodation, was cured by the removal of polypoid growths from the inferior and middle tubinated bones in the corresponding nostril, and of retro-pharyngeal adenoids.

REFERENCES.—[1] "New York Med. Journ.," July 10, 1898; [2] "La France méd.," Aug. 5, 1898.

PURPURA. *T. Colcott Fox, M.B.*

Recent publications show the drift of opinion on the pathogeny of many cases of purpura. Thus, Felsch[1] writes on Purpura rheumatica following Middle Ear Suppuration; Lapin[2] on Infective Purpura; Robert[3] on Purpura in Enteric Fever; and Pagliano and François[4] on Infective Purpura in the course of Ulcero-membranous Stomatitis In the London "Lancet" are records by Lees on a case of extensive

purpura complicating virulent acute rheumatism (Oct. 28, 1899), and by Cureton on a case of purpura hæmorrhagica in which streptococci were found in the blood after death (Feb. 25, 1899). Haushalter and Etienne write of Streptococcic Hæmorrhagic Septicæmia in Variola, and Hæmorrhagic Staphylococcic Septicæmia during the desquamative stage of Scarlatina.

A most interesting review on *The Purpura of Childhood*, by Leon Perrin, is thus epitomised in the London "Lancet":—

"This term, he reminds us, no longer stands for the name of a disease, but of a symptom. The condition of blood-stasis which it denotes, whether merely an intense congestion with capillaries unruptured or a true extravasation, is in the great majority of cases due to an infective process—a toxæmia. Even the rheumatic variety, he maintains, ought to be relegated to the same series as those of obviously septic origin as being also toxic, though by means of a different toxin. Purpuras associated with syphilis, with the eruptive and other infectious fevers, with septic pleurisies and pneumonias, are necessarily of this character. In the same connection a reference to two cases in which the presence of staphylococci was demonstrated in the blood is interesting. Dr. Perrin also quotes the observations of de Boeck-Renher, Hutinel, Le Gendre, and others to prove the frequency with which the tonsil serves as the chief point of entrance for the germs of disease. But whether this gland, or the skin, or the gastro-intestinal canal provides the nidus, the later action of toxic products is essentially the same in all cases. They penetrate the tissues, alter the composition of the blood, and by attacking either directly the capillaries, or indirectly the vaso-motor centres, reveal their presence by the sign of purpura. Neither is the influence of the non-vital agents without significance in this connection. Various drugs—mercury, iodoform, arsenic, and others—afford the same purpuric signs after a period of use, and they doubtless act by means of the same physical mechanism. Cachectic and other allied morbid states also do this by developing a variety of auto-toxins. Purely physical and metaphysical forces—as cold, emotion, etc.—have, on the other hand, merely a predisposing effect. Not the least interesting details in this interesting paper are those relating to age. Purpura, as is well known, is very frequent in childhood, more so than in adult life. In this respect it resembles the eruptive fevers. From four to ten years is the most usual age-period for its appearance, though it is fairly common up to twenty. Dr. Perrin, however, quotes cases observed by Steffen, some of which occurred at a much earlier stage of life—viz., one at thirty-six hours, one at eight days, one at a

fortnight, one at six weeks, and sixteen from three to nine months after birth."

REFERENCES.[1]—[1] "Berlin. Inaug. Diss.," July, 1898: [2] "Lyons Thesis," 1898-9; [3] "Paris Thesis," May, 1899; [4] "La Presse méd.," No. 33, 1899, p. 196; [5] "Rev. mens. des mal. de l'enfance," June, 1898; [6] "Arch. de méd. des en ants." Sept., 1898.

PYOPNEUMOTHORAX. *Prof. H. P. Loomis, M.D., New York.*

In the differential diagnosis of *Supra-phrenic* and *Sub-phrenic Pyopneumothorax*, Dr. Sidney Short[1] tabulates the following points of distinction. He calls attention to the value of the history of the case, particularly in the manner of its onset, and the previous history of the patient. In the supra-phrenic variety, the commonest cause is the rupture of a portion of the pleura covering the diseased lung. The sub-phrenic variety is commonly due to the perforation of a gastric ulcer, or secondary to a hepatic abscess. If the onset is sudden, the diagnosis may be taken to lie between pneumothorax from early phthisis, and a perforating gastric ulcer or hepatic abscess. In the first, there is acute pain, with coughing, on the affected side. In the perforating gastric ulcer, pain is felt in the epigastrium, accompanied by acute tenderness; vomiting may be present in both conditions, but is more common in pneumothorax. The most important point in the physical examination is to determine the position of the diaphragm. The signs of displacement of surrounding organs are also important points. The movement of the diaphragm must be noted. Troubles in the thorax usually depress it so that it fails to act. Disease below the diaphragm raises it, but allows it to continue its motion, which can be recognised by its effect upon the abdominal walls and the abdominal viscera. When pyopneumothorax occurs in the left side, the most common cause is perforation of a gastric ulcer. Cases of the cure of a gastric ulcer are so common in the hospital, and this result is so uniform, that there must be some special reason why cases in the hospital so frequently perforate. The pressure of the corset upon the stomach may be a reason. The most valuable signs of perforation are violent pain over the stomach coming on quite suddenly, vomiting, shortness of breath, rapid pulse and general signs of early peritonitis. If operation is not performed at once, the course of the case either presents a general peritonitis, or localisation of the process and the formation of a sub-phrenic abscess. Each sign should suggest a careful examination.

TREATMENT.—Dr. Samuel West recommends in the treatment of pneumothorax **Stimulants** to relieve shock, and **Opium** or **Morphine** to relieve pain and nervous excitement. If dyspnœa be urgent, the side

should be tapped, a siphon arrangement, not an aspirator, being used. In cases where dyspnœa increases in spite of repeated tapping, dry or wet cupping or venesection may afford great relief. In the later stage, if fluid form, the treatment to be adopted will be decided according to the nature of the fluid, as shown by the exploratory needle. In the case of a serous effusion it should not be left too long, but should be drawn off by siphonage if it persists for several weeks. If the fluid be purulent, Dr. West strongly advocates treatment by incision and drainage, as in a case of empyema; for while, if left alone, the pus may find its way out either through the lungs or externally, cure after this method is extremely rare. As regards tapping for pneumothorax, Dr. West knows no case in which this has afforded more than temporary relief. While Dr. West's views as to the treatment of pyopneumothorax may be correct, it must be admitted that they are not those at present generally accepted. Many surgeons are opposed to operative measures, and look upon the treatment of pyopneumothorax by incision with disfavour.

REFERENCES.—"Birmingham Med. Rev.," April, 1899.

PYORRHŒA ALVEOLARIS. *J. G. Turner, F.R.C.S., L.D.S.*

Rigg's Disease: Expulsive Gingivitis.—There is a destructive caries of the alveolus, in many cases marked in the late stages of its progress by a swollen, inflammatory state of the gums, and by discharge of pus from around the necks of the teeth. In this stage it was first described, and hence called pyorrhœa alveolaris.

This destructive caries is met with in all forms, from a chronic, dry, destructive process to a subacute inflammatory process accompanied by considerable discharge of pus from around the necks of the teeth. In nearly, but not quite, all cases it is accompanied by a deposit of tartar, dark coloured and in shallow flakes, round the necks of the teeth. This tartar has been stated to owe its origin to deposition of lime salts in coagulated serous exudation, and has hence been called serumic tartar. It is found often in wedge-shaped flakes; the base of the wedge facing towards the crown, the edge towards the root of the tooth, as if deposited *pari passu* with the destruction of the alveolus. By many this is thought to be the starting point of the disease, and it is possible that small deposits have been overlooked in cases described as occurring without deposition of tartar. According to the acuteness of the case the gums around the affected teeth are swollen and spongy, readily bleeding, and exuding an excess of ropy mucous. Between the gums and the teeth, which are often partly hidden by the swollen gums, are pockets more or less deep according to

the extent of destruction of the alveolus, and by turning aside the gums the deposits of tartar may be seen, or felt by a fine steel probe, and the extent of alveolar destruction determined.

While the acuter forms attack the whole alveolus wherever teeth are found, the more chronic are often limited to a few teeth, or at any rate, at first produce clinical results in only a few. The most chronic forms are evidenced by slow recession of the gums, as the alveolus and alveolar dental ligament are destroyed; by a more or less obvious line of congestion round the necks of the teeth, often of a reddish colour; and by slow loosening of the teeth which appear to be elongated. The effect of this loss of bony implantation where, as is normally the case, the cusps of the antagonistic teeth slide one on the other in mastication, is to thrust the teeth out of their normal directions. This is especially seen in the case of the upper front teeth. People with upper incisors and canines protruding in a fan-like manner, and widely separated from each other, will often say that once their direction was normal, but that in course of years they have assumed this vicious arrangement. Excluding those cases which are due to undue use of the incisors in mastication, owing to loss of molars, this fan-like arrangement of the teeth is due to a chronic destructive caries of the alveolus, and examination of the necks of the teeth will show thin deposits of hard, dark coloured tartar. In these cases there is no visible discharge, the caries is 'dry,' and the gums, though receded, are apparently applied closely to the teeth. If, however, a fine steel probe, such as what is known as a Donaldson's bristle, be passed between the tooth and the gum, it will be found to pass a varying distance up before encountering the edge of the alveolus.

When this chronic form attacks a single tooth in a row of teeth, such a bristle will often show that the whole depth of the alveolus has been destroyed, while the gum has yet remained up to its normal level. In the acuter forms there is a constant discharge of pus, and secretion of viscid mucus, while in the pockets round the teeth food *débris* lodges and decomposes, and the patient is constantly mixing with his food and swallowing saliva of a most noxious nature. The result is sore throats, gastric catarrh, and failure of nutrition. The patient becomes debilitated and a ready prey to disease. More than this, it appears certain that gastric ulcer, and even gastric carcinoma, may have their origin in infection, or long continued irritation from this source. The importance of efficient treatment of this disease cannot be too strongly urged.

Treatment.—Whether the deposits of tartar already described be cause or sequence, it is obvious that by irritating the gums in con-

tact with them, and by affording lodgement for *débris*, they provide for their own increase and for the *maintenance* of the disease. Hence the first step is **Removal of the Tartar.** This is no easy matter. The deposits are small in amount and cling close to the teeth ; they are surrounded by congested and readily bleeding gums, and are only brought to view by everting the edges of the pockets. Besides the process of removal is often very painful. This may be partly got over by syringing out the sockets with a fine syringe, such as is used to pass along the canaliculus in eye-work, and then packing pledgets of cotton-wool soaked in cocaine between the teeth and the gums ; but since cocaine is not readily absorbed by inflamed tissue, this is not always entirely successful in numbing pain. When this has been done, a fine edged chisel-like instrument should be slid, flat face next the tooth, along the tooth towards its root, till the tartar is felt, then if the edge be kept close to the tooth it may be flaked off with but little force. Straight instruments will serve for the more anterior teeth, but various curves are needed for the back ones. Or it may be removed by the use of curved instruments, applying the force by pulling towards the crown of the teeth. After loosening, the tartar must be syringed or drawn away from within the sockets. The next step is to apply some germicide to the alveolus. One of the best is powdered **Copper Sulphate**, either mixed with glycerin or used as a powder. The pockets are first dried, and then the copper sulphate is pushed up into them by means of a small spatula-shaped piece of wood, *e.g.*, one of Bryant & May's matches suitably cut. This application will have to be repeated several times, and the patient must be warned that the disease is nearly certain to recur.

The patient must also be instructed to use a **Mouthwash** frequently, especially *before* meals. The following is a prescription suggested :—

℞ Acid. Carbol.	♏iv	Glycerin	℥j
Sod. Bicarb.	gr. x	Aq. Menth. Pip.	℥j
Pot. Chlor.	gr. x		

Etiology.—Syphilis and gout have been invoked as potent factors in the production of this disease, but beyond the fact that mercury more readily produces salivation when there is dirt or tartar round the teeth, the writer can trace no intimate connection between the two diseases, while in his experience the gouty are no more liable to the disease than are other people. Some practitioners, indeed, regard the slow loosening of the teeth of the chronic form as a *symptom* of gout ; but though the writer has often enquired, he has never been

able to establish that the gouty are more liable to the disease than others, and in fact in most cases has failed to find any evidence at all of the existence of gout.

Probably a large number of the cases are started by the favourable nidus afforded by tartar for the development of micro-organisms, the alveolus becoming infected from the tartar or gums; but seeing how the mouth teems with organisms, it need be no matter for surprise if infection occurs without the aid of a ridge of tartar. One curious point, the import of which is not evident, is that dead teeth are less liable to the disease than are living.

The writer has never succeeded in cultivating any organism except staphylococcus albus, but Mr. K. Goadby announces that he has succeeded in consistently cultivating a spirillum from cases of this disease.

RECTUM (Excision of). *Samuel G. Gant, M.D., New York.*

Case[1] reports two cases of rectal cancer operated on by the Kraske high incision, and two by the Rydigier method with the following results: The one operated on first by the Kraske lived fourteen months, the second eight months. Death followed one of the Rydigier's in a few hours from shock, the other lived for ten months. The growths in all were far advanced when first seen; he believes if he had seen them earlier their lives could have been materially lengthened, and, perhaps, a radical cure made.

Keen[2] reports two unusually interesting cases of excision of the rectum for cancer. In each he did a preliminary colostomy, and then removed the rectum by the Kraske method. But instead of making an artificial anus in the sacral region, the lower end of the rectum was inverted and completely closed, so that all fæcal matter must pass out through the opening made in the groin. He says that if the closure is a success neither fæcal matter nor infected mucus will reach the wound, and primary union will be obtained which materially lessens the danger of life. Secondly, as the perineal wound is completely closed, no escape of fæces or mucus occurs after recovery, and the patient is relieved of the necessity of wearing a napkin. Thirdly, for the same reason we avoid any prolapse. In one of the two cases there was slight leakage, and in the other a slight hæmorrhage, but both made excellent recoveries. One, after seven months, is now working at his trade as blacksmith.

REFERENCES.—[1] "Tacoma Med. Soc.," 1898; [2] "Louisv. Journ. Med. and Surg.," Sept., 1898.

RECTUM (Tumour of). *Samuel G. Gant, M.D., New York.*

England publishes in the "British Medical Journal" a case of closure of an artificial anus in the left inguinal region in a boy fifteen years old. It was made to relieve urgent symptoms caused by a tumour of considerable size producing obstruction situated four inches above the anus. Within seven months it diminished so much that water injected into the anus flowed freely out of the groin. It was decided to close the opening, and an incision was made around the muco-cutaneous juncture. The walls were freed and the peritoneal cavity opened, with the result that no tumour could be felt in the rectum or sigmoid. The opening in the bowel was then sutured transversely and a second continuous Lembert was introduced, after which the omentum was brought around the bowel like a cuff to prevent leakage. Next, the scar tissue in the abdominal wall was removed and the wound closed. For the next few days the patient did nicely. On the fourth he was given six triturates of **Hydrarg. Subchlor.** (grs. 10), one to be taken hourly. The next day he had two copious stools. Primary union was obtained, and he made an uninterrupted recovery, being up and about, and perfectly well on the fifteenth day.

RECTUM (Ulceration of). *Samuel G. Gant, M.D., New York.*

Samuel G. Gant[1] reports an unusual case in which an inguinal colostomy was made in a young woman eighteen years old for the relief of a persistent rectal ulceration thought to be tubercular in character. All kinds of remedial agents, general and local, had been previously tried; in addition a thorough curettement had been made, but nothing seemed to do her any good. The ulceration did not heal, but, on the contrary, gradually extended itself until almost the entire rectum was involved. Her complexion became bad, she lost flesh, suffered from chronic diarrhœa, had frequent discharges of pus, blood, and mucus; besides these constantly annoying symptoms she was rarely free from pain, which was located in the rectum, up the back and down the limbs.

From the time the artificial opening was made all fæcal matter passed through it, nothing passing from the rectum except a slight amount of normal mucus. A solution of **Alum,** 1 drachm to a quart of water, was passed into the rectum and out at the groin night and morning; besides this the ulcerated surface was touched up three times weekly with a solution of **Nitrate of Silver,** 20 grs. to the ounce, for the first few weeks; in addition she was given anti-tubercular treatment. Within six months from the time of operation all her

symptoms had disappeared, and she said she felt perfectly well. She was seen every few weeks during the next three years, during which time she enjoyed the best of health, gained considerably in weight, and was earning her own living as waitress. She usually had one free action before breakfast every morning ; at other times she was not bothered with the frequent discharge of faeces as occasionally occurs after colostomy. A little over three years after the opening was made she became engaged and desired it closed. Examination showed conclusively that the ulceration was entirely healed, and further that there was an absence of stricture ; a number ten Wales's bougie (extra length) was passed through the anus and out at the opening in the groin without difficulty. She was placed in the hospital and prepared for operation two days later. An incision was made at the juncture of the skin and mucous membrane, and the gut carefully dissected from the surrounding tissues. Because of the spur, the ends of the bowel when brought out of the abdominal cavity were found firmly adherent, showing the superiority of this method of operating to that of simply stitching the upper edge of the sigmoid to the parieties ; the latter permits fæcal matter to pass out at the opening in the groin and the rectum as well. The adherent portions were excised, a purse-string suture was thrown around the end of each, a Murphy button inserted, locked, the sutures tied, and the gut dropped into the abdominal cavity. The peritoneum, muscles and integument were brought together separately with catgut, and protected by a dry dressing. Primary union was obtained, she passed the button on the tenth day, and made an uninterrupted recovery. She was under close observation for a year, and during this time there was never a symptom of stricture or a tendency to a return of the ulceration. There are few, if any, cases on record where an artificial anus had been in existence thus long and then closed by an end-to-end anastomosis with Murphy's button or otherwise.

Adler[2] classifies *non-malignant* ulceration of the rectum as follows : (*a*,) Varicose ; (*b*,) Traumatic ; (*c*,) Dysenteric ; (*d*,) Irritable ; (*e*,) Catarrhal or follicular ; (*f*,) Those arising from general debility occasioned by Bright's disease, phthisis, diabetes, and starvation ; also into (*g*,) Tuberculous, (*h*,) Chancroidal, (*i*,) Syphilitic, and the so-called (*j*,) Rodent. He believes that dilated rectal veins are a predisposing factor to *all ulcers* in this region, rather than as a class by itself. In regard to the treatment of rectal ulcers in general he has this to say : **Rest** is of primary importance, for the healing process will not advance if the patient be permitted to follow the usual habits of life. The medical treatment must be adapted to the nature of the

lesion as well as to the constitutional condition of the individual. **Diet** is another important factor. In cases of simple ulceration the use of **Enemas of Flax-seed Tea** is of advantage in cleansing the bowel and in creating an evacuation; a pint or more of this may be used twice a day. Astringent injections may be employed, such as **Fluid Hydrastis** (1 to 2 tablespoonfuls to 6 or 8 ounces of water); solutions of **Nitrate of Silver** (2 to 8 grains to the ounce). Insufflation of various powders may be used with marked benefit, such as iodoform, subiodide or subgallate of bismuth, calomel and the subnitrate of bismuth, equal parts. An excellent injection, in my experience, for these conditions is the following :—

℞	Fluid Hydrastis	Compd. Tinct. of Benzoin	āā ʒij
	Fluid Ext. of Ergot	Fluid Ext. of Hamamelis	ʒij

M. Sig.—To be well shaken before using. One half ounce at a time, to be injected daily into the rectum.

Pain can be usually allayed by the use of **Iodoform Suppositories,** 5 to 10 grains each, used every six to twelve hours. The use of opiates is injurious, if not dangerous. The best treatment for irritable ulcer is, no doubt, that of stretching the sphincter muscles and dividing the floor of the ulcer with a sharp bistoury. I prefer to use a curette instead of the knife, and to scrape the surface of the ulcer thoroughly. Where the sphincters are not hypertrophied the application of **Silver Nitrate,** 10 to 20 grains to the ounce, every third or fourth day, will effect a cure. There is no reliable treatment for the radical cure of tubercular ulceration. Curettage and the application of iodoform offers only temporary relief. Similar experience has been met with in the treatment of rodent ulcers. Chancroidal and syphilitic ulcers require special treatment, and will be considered in a later article.

REFERENCES.—[1] "Kansas City Acad. of Med.," Feb. 20, 1898; [2] "Phil. Med. Monthly," July, 1899.

RETINA (Disorders of). *F. Richardson Cross, M.B., F.R.C.S.*

Stillson[1] (Indianapolis) claims that he has cured four recent cases of *detachment of the retina* by means of one **Galvano-Puncture** of the sclerotic, opposite to the centre of the detachment, and another at its edge. He also treated an old case unsuccessfully by the same method. In no patient was there any severe reaction.

Retinitis Circinata.—Ammann[2] (Zurich) reports the first case in which the opportunity was presented for anatomical examination of retina affected by this disease, since it was described by Fuchs, in 1893. On examination with the microscope, he found great numbers of small hæmorrhages that had not been observed during life or macro-

scopically. The white spots characteristic of the disease were seen to be areas of fatty degeneration, which clearly had their origin in hæmorrhages, although they could not be seen to follow the hæmorrhages directly, owing to the intervention of a hyaline stage in which they became invisible.

For *central retino-choroiditis of syphilitic origin, and idiopathic vitreous opacities*, De Schweinitz[3] recommends hypodermic injections of **Pilocarpine**. He injects $\frac{1}{12}$ to $\frac{1}{8}$ gr. of the drug every second or third day, and claims to have obtained good results in cases in which mercury and iodide of potassium had previously been exhibited in large doses without avail. The nausea and depression which sometimes result from the treatment, can often be avoided by administering 30 drops of chlorodyne half an hour before the injection. In other cases De Schweinitz has given fluid extract of **Jaborandi** by the mouth, when the hypodermic injections have not been well borne.

REFERENCES.—[1] "Amer. Journ. Ophth.," May, 1898; [2] "Archives of Ophth.," vol. xxvii, p. 2; [3] "Ophth. Rec.," Feb., 1898.

RHEUMATISM AND GOUT. [*Editorial.*

Gout.—Dr. George W. Balfour[1] describes the pathology of an acute attack of gout.

The earliest visible sign of a gouty paroxysm is the appearance of turgid veins arising in the neighbourhood of the joint affected and running for some distance along the foot. But stasis of the blood within the metatarso-phalangeal joint of a toe sufficient to cause the excruciating pain of gout is certain to be accompanied by the formation of an anæmic area in and around the joint, and naturally the veins connected with this area of negative pressure get filled by reflux from the contiguous valveless veins. The turgescence of these veins is in the foot somewhat favoured by gravity, and it continues very evident until the veins reach a part where normal conditions of the circulation prevail—that is, where there is no longer any reflux because the veins have ceased to be valveless. While the veins have been gradually getting turgid plasma has been slowly accumulating within the area of negative pressure, and as the corpuscular elements have also escaped by diapedesis into the tissue interspaces and the red corpuscles readily part with their colouring matter to the plasma the turgid veins have not been long visible before we have a swelling in and around the joint, which becomes increasingly tense, stretching the skin and giving it a glistening appearance, all the more striking from the dusky redness due to the colouring matter of the red corpuscles. After a fit of gout the cartilages and other tissues about

the joint are found to be infiltrated with crystals of urate of soda, a condition which is trifling after a first attack, but which increases with each succeeding paroxysm. This has been regarded by some as the result of the peculiar character of the gouty inflammation. But from beginning to end of a gouty paroxysm there is neither sign nor symptom of inflammation, and the presence of these crystals is susceptible of a simpler explanation. For in gout we know that the blood-plasma contains urates which are not very soluble, and when the plasma accumulates within the anæmic area surrounding a gouty joint the salts slowly crystallise out of the extravascular fluid and get left behind when the serous part of the fluid is reabsorbed, infiltrating the joint, the cartilages and the surrounding tissues, and gradually accumulating after each succeeding paroxysm till they form those tophaceous deposits we know so well as the result of repeated attacks of gout. All the objective phenomena of a gouty paroxysm are thus readily explicable on the supposition of a stasis (or block) in the capillaries of the affected joint, and so far as Dr. Balfour can see they are not to be explained by any other theory whatever.

Dr. Chalmers Watson,[2] as a result of experiments in the physiological laboratory, proves that uric acid is present in the blood of birds, and that there is no evidence to support the view of Garrod and Luff that the kidney is the real seat of uric acid formation.

Dr. Mouillot[3] believes that the proximate cause of the gouty state lies in a defective metabolism of proteids due to a functional disease of the liver or intestinal glands, and that the deposit of sodium biurate is due to deficient elimination by the kidneys owing to a diseased condition, or through their action being inhibited by an impure condition of the blood.

Gout as a Factor in Life Insurance.—Mr. James Meikle[4] states that as the result of observations based upon five hundred and twenty-five lives which had been charged an extra premium by insurance offices in Scotland in consideration of their being afflicted by gout, he found that the number calculated to die according to the standard was one hundred and twenty. The actual number who died was one hundred and sixty, or an increase of 33 per cent. This increased mortality, with one exception, pervades the whole range of life.

TREATMENT.—At the meeting of the Academy of Sciences, held on May 1st, 1899, M. Guilloz[5] pointed out that the indications in the treatment of gout (a disease which, with M. Bouchard, he considered to be an auto-intoxication following upon impaired nutrition and so leading to uratic deposits in the tissues) were to improve the nutrition and activity of the tissues as much as possible, so as to aid elimination of waste

substances. M. Guilloz had tried the application of **Electricity** in certain patients suffering from obesity, who, without any alteration in diet, lost about one kilogramme in a week. The nitrogenous output was not increased, proving that the loss came from the fat and hydrocarbons, showing greater tissue activity. M. Guilloz has tried this treatment in seventy-five cases of gout. He uses cataphoresis of lithium to the affected joints, and also high frequency currents both locally and generally. The method has been found to relieve pain, improve the movement in the affected limbs, and influence the general health. It has not as yet given any good results in cases of chronic rheumatoid arthritis.

Salicylates and Alkalies.—An editorial[6] in the "Lancet" says that: "The treatment of this disease by alkalies is mainly based on the assumption that uric acid is present as such in the blood and tissues, and is rendered soluble by the administration of alkalies, that uratic deposits of sodium biurate are dissolved by alkalies, and that the system of a gouty person is pervaded by a general acidity which is neutralised and removed by alkalies. With regard to the first assumption, it is now well known that in gouty subjects uric acid is never present as such in the blood and tissues, but is always combined with sodium as the quadriurate or biurate. The only way in which alkalies could beneficially affect the quadriurate would be to delay its conversion into the biurate. Experiments with an artificial blood-serum to which potassium carbonate, potassium citrate, lithium carbonate, lithium citrate, sodium bicarbonate, sodium phosphate, piperazine and lysidin were added in solution showed that this conversion is not delayed. The following do not in the slightest degree increase the solvent power of the blood for gouty deposits: Potassium carbonate, potassium citrate, lithium carbonate, lithium citrate, sodium phosphate, piperazine and lysidin. Sodium bicarbonate slightly decreases the solvent power of the blood for gouty deposits. The assumption that in connection with gout there is a general acidity of the system which causes a diminished alkalinity in the blood is opposed to the results of recent investigations upon the subject. Klemperer showed that the alkalinity in the blood in gout is very little, if at all, diminished, and that corresponding variations in the alkalinity of the blood may frequently be met with in healthy individuals. Moreover, a diminution of the alkalinity of blood-serum containing uric acid in solution does not facilitate the deposition of sodium biurate from it, nor does a diminution in the alkalinity of blood-serum diminish its solvent power for sodium biurate. Experiments with sodium salicylate show that it has no direct action either

in delaying the decomposition of sodium quadriurate or in effecting a solvent action on deposits of sodium biurate. The supposed solvent effect of sodium salicylate for gouty deposits does not, therefore, exist. The correct explanation of the increased elimination of uric acid in the urine during the administration of sodium salicylate is that salicylic acid unites readily with glycocine, and so conveys an increased amount of that body to the kidneys, where, by its combination with urea, an increased amount of uric acid is necessarily formed. This increased formation of uric acid is directly detrimental to gouty subjects, and on that account the salicylates are contraindicated in that disease. The general conclusions are that the ordinary alkalies, lithium salts, piperazine, and lysidin are useless, and sodium salicylate is also apparently contraindicated in gout."

The "Therapeutic Gazette,"[7] dealing with the same subject, says: "There is no class of diseases of which we know so little in respect to their etiology and pathology as those which are classed as diathetic, or in other words, dependent upon some disorder in the nutritional processes which we call metabolism. Because of this ignorance the use of all our remedial measures for this class of cases is to a great extent empirical and unsatisfactory, and the exhaustive studies of the last few years made by Garrod, Haig, Luff, and others, while seeming to promise far more satisfactory knowledge of these diseases, have not advanced as far as the practical clinician and therapeutist desires. That the disease, gout, does depend upon faulty metabolism, and that as a result of this fault uric acid is formed in the body in excess, is proved, but the causes of the faulty metabolism are undiscovered, and therefore our methods are chiefly devoted, aside from diet, to its relief rather than the cure of the malady. It is not our intention at this time to attempt to discuss the very important question of the pathology or pathogeny of gout; on the one hand we find the nervous origin urged, and on the other that an accumulation of uric acid is the factor to be combated. Much of Haig's suggestive work, however, is based on hypotheses which do not seem to us to be founded upon fact, and certain of his experiments, accurate in themselves, are equally hypothetical in origin. If, as he claims, uric acid in excess is the cause of the attacks of gout, we should have theoretically a most sovereign remedy in salicylic acid, but as a matter of fact it very often fails, and a decision as to its anti-gout powers is to be sought therefore more in clinical observation than in experiment.

"About this point opinions differ most essentially, some clinicians asserting that the salicylates are most efficient, and others teaching that they are futile. Thus Germain Sée and Jaccoud believe them

superior to colchicum, whereas Sir Dyce Duckworth, Barclay, Ebstein and Lécorché believe the salicylates less valuable.

"It is evident at once in studying this matter that we must divide it into two parts, namely, as to the value of the salicylates in the acute attack, and as a remedy for the condition between the attacks and for the cause of the attack.

"In respect to the attack Duckworth reports that he has tried sodium salicylate in a considerable number of cases of acute gout and finds it very inferior to colchicum, and enquiry among his friends elicited a similar conclusion. He has, however, seen it do great good in a few cases in which colchicum failed, but he cannot predicate which will be benefited. Ebstein thinks that under the salicylate treatment the manifestations of the attack simply shift from joint to joint. Lécorché asserts that while salicylate of sodium often relieves the pain of gout, it does not shorten the attack, nor does it prevent subsequent attacks, although he asserts that its use in full doses of 1 to 1½ drachms increases the elimination of uric acid in the urine, and Henri Soullier asserts that the salicylates are the best remedies if the kidneys are intact."

The following formulæ[8] have been recommended: —

℞ Quin. Sulph.	ʒj	Acid. Citric		ʒij
Syrup. Simplicis		Aquæ Destil.		ʒvj
Syr. Aurantii Flor.	āā ʒij			

M. Sig.—Ten drops in an ounce of water, to which are added twenty grains of bicarbonate of sodium, to be taken while effervescing.

℞ Tincturæ Colchici Seminis	♏xv	Magnesii Sulphatis	ʒss
Magnesii Carbonatis	gr. vj	Aquæ Menthæ Piperitæ	q.s. ad ʒj

Fiat haustus. Sig.—Repeat according to circumstances.

Acute Rheumatism.—Nothing has been added to our knowledge during the past year on the pathology or bacteriology of rheumatism. The efforts to discover a bacillus have not been very satisfactory in their results, not that bacteria have failed to be discovered, but because the possible connection between them and the disease is so difficult to prove. There is nothing in the etiology or pathology of acute rheumatism to render necessary the intervention of a bacillus.

The fever of acute rheumatism is distinctly a beneficial process; it is more dangerous to arrest the fever by huge doses of salicylates than to let it run its course. We know that rheumatism with fever tends to run its course in a few weeks; the rheumatism without fever, or sub-acute rheumatism, tends to run on indefinitely. By salicylates we often convert the acute into the sub-acute case, to the disadvantage of the patient and the imminent danger of injuring the heart.

We are glad to find ourselves supported in this view of the dangers of salicylates by the editor of "Treatment," in a review of a recent paper by Dr. Lyman.[9] He writes: "Most emphatically, however, salicylate of soda is *not* a specific for the disease. The fact is that it relieves pain and lowers high temperature, both highly important and very valuable qualities. But it is absolutely erroneous to teach that the drug has an influence in shortening the disease; it does nothing of the kind. Further, its benefits are directly proportioned to the height of the temperature. In the very common sub-acute cases it is useless. Dr. Lyman says no word about its influence on the cardiac complications of acute rheumatism, and, in truth, nothing that is good can be said for the drug in this connection. It does not prevent endocarditis, it does not shorten or alleviate endocarditis when present; on the contrary, it tends to weaken the heart. Dr. Lyman evidently has a firm and robust faith in the virtues of the drug. It is a valuable agent undoubtedly, but it is a mistake, in our opinion, to award it a measure of praise to which it is not entitled."

Catrin,[10] in the "Journal de Médicine de Paris," of June 11th, 1898, thinks that the usefulness of **Salicylate of Methyl** in relieving the pain of acute articular rheumatism is incontestable. It relieves the pain in his opinion more rapidly than does the salicylate of sodium, although it does not reduce the fever as does the latter drug. In his experience it has been an infrequent occurrence to find that the drug materially disordered the stomach. The doses which he commonly employs are stated to be as much as one ounce a day, but we doubt very much whether the ordinary case could possibly ingest this quantity.

In regard to the use of salicylate of methyl locally, the author thinks that bands of tarlatan soaked in salicylate of methyl may be wrapped around the joint and covered by an impermeable dressing, with great advantage to the patient.

Lemoine[11] has reported his employment of **Methylene Blue** in acute articular rheumatism, and claims to produce results which are equal to those produced by salicylate of sodium. It also acts well in gonorrheal rheumatism. He states it is essential that the blue which is employed shall be free from contamination by zinc.

Ichthyol[12] has been shown to be an excellent remedy for the external treatment of acute articular rheumatism, particularly of the chronic form, because of its analgesic and reducing properties. Friedrich Kölbl[13] reports having treated one hundred and seventeen cases of acute articular rheumatism at the most various stages and with the most satisfactory results. The method of application is as follows:—

The ichthyol solution, prepared, for instance, from ichthyol 50 parts,

glycerin 20 parts, and water 30 parts, or from ichthyol and water in equal parts, is warmed, and mull or calico bandages impregnated with it. With these prepared bandages the affected joint is lightly bandaged. It is advisable to clean the affected part with warm water previous to applying the bandage, which should be covered with an impervious fabric to prevent evaporation. The joint so treated is next covered with dry cloths heated to from 40° to 60° C., and these applications renewed every ten minutes at first, and later, every half-hour. Instead of the solution, pure ichthyol may be used, or an ointment of equal parts of ichthyol and lanolin, which may be painted on the affected part with a soft brush. After the joint has been treated in the above described manner for three or four hours, according to the intensity of the affection, the ichthyol bandage is renewed, the hot applications being omitted, however, and the bandage is permitted to remain for from four to six hours in place. It is then renewed, and the joint cleansed and bound in a soft bandage. As a rule, the pains are considerably reduced already after the first packing, the joints softer and more supple, and their movement freer, not only in parts directly treated with ichthyol, but in all the other joints. Repeated comparative trials have shown that hot packings alone do not effect, even in the slightest degree, the satisfactory results yielded by ichthyol packings. In chronic acute articular rheumatism the treatment must be carried out for an extended period in order to obtain lasting result. The ichthyol packings, therefore, fully replace the sulphur- and mud-baths heretofore recommended. Many invalids, unable to visit any health resort, were cured by the application of the hot ichthyol packings every evening on return from the daily occupation. The treatment is also of great benefit in true gout (arthritis deformans).

External Use of Phenacetin.—The "Revista de Ciencias medicas de Barcelona" for March 25th 1899, ascribes the following formulæ to Taylor[14]:—

℞	Phenacetin	grs. lxxv	Olive Oil	q. s,
	Lanolin	grs. ccc		

M. For an ointment.

Or,

℞	Phenacetin	grs. lxxv	Rectified Alcohol	
			Hot Water	āā grs. md

Compresses may be soaked in this solution and applied hot.

Heat.—Wilms[15] has devised a simple apparatus for the continuous application of heat to joints, which in principle resembles Leiter's tubes. Flexible metal tubes are coiled several times round the joint, a thin layer of plaster of Paris being first applied to protect the skin.

A constant stream of water, at 175° to 195° F., is maintained through the coil by siphon action. In practice the water is used as hot as it can be borne. The writer has had very good results with this method of treatment in cases of chronic articular rheumatism. In gonorrhœal rheumatism especially, the cure was completed in a shorter time and with less restriction of movement than with other methods.

Gonorrhœal Arthritis.—Loewenhardt [16] says that this disease is not yet admitted by all as a specific disease, some writers still maintaining that it is only the accidental occurrence of rheumatism in a sufferer from gonorrhœa. The gonococcus has, however, been frequently found in the affected joints, and it is probable that failures to find it in other cases may have been due to defects in the technique employed in the search. This organism is an obligatory parasite; its toxins have been isolated, and an emulsion of dead bacteria has produced suppurative arthritis experimentally. Other manifestations beside joint affections may occur in the course of the disease, such as skin eruptions, endocarditis, retinal changes, and psychical disturbances, so that instead of a local ailment gonorrhœa in some cases comes to be a general disease ("Gonococcosis," D'Aubney). It may even occasionally prove directly fatal. The arthritis is distinguished from rheumatism by the nature of the changes in the joints, being characterised by only slight destruction, followed by an exaggerated reparatory process, with formation of granulation tissue, leading to fibrous ankylosis. Relapse or reinfection is very liable to cause renewed joint affection, whereas an intercurrent attack of rheumatism or exposure to wet and cold does not have this effect. From osteo-arthritis it is distinguished by the absence of changes in the bones.

No drug can lay claim to act as a specific in this disease. Relief of pain is sometimes afforded by salicylate of soda, and iodide of potassium is occasionally useful, though it often fails. The same may be said of "oleum gaultheriæ," recommended by Taylor. The writer finds that **Salol** and **Sandal Wood Oil** administered in capsules give the best result. Of mercurial treatment he has had no experience. The affected joints should be fixed on splints to secure absolute rest, but this treatment should not be continued longer than is absolutely necessary. It is advisable to draw off the fluid from the joint if it is much distended, and even arthrotomy may be practised. Later on massage is useful, and heat, applied by means of hot air or sandbags, is appreciated by the patient. In the former Härtel's apparatus is to be preferred.

Dr. Bradley Gaither [17] says cases of gonorrhœal artnritis have been classified into serous, sero-fibrinous, sero-purulent, and purulent

synovitis, the names applied expressing the character of the contents of the joints. The serous and sero-fibrinous are the milder and more frequent forms of the disease. They generally end in complete resolution, with a gradual return of unrestricted motion. Every recurring attack seems to take a more severe form, and a third or fourth infection will almost certainly result in permanent disability. Purulent synovitis, fortunately, is rare. It often results in the complete destruction of the joint affected, sometimes necessitating resection or amputation. The knee-joint is most frequently involved in gonorrhœal arthritis, furnishing about one-half of the cases. Next in order follow the ankle, shoulder, and hand. Fournier collected reports of one hundred and twenty cases. The number of joints affected was two hundred and twelve. The knee was affected in eighty-three cases (more than two-thirds), the ankle in thirty-two (about one-fourth), and the fingers and toes in twenty-five (about one-fifth). The disease is present in 2 per cent. of all cases of specific urethritis in males, but is rarely found in females. A man of such large experience as Foucart says that he never saw a case in a woman. Instances have been reported in which gonorrhœal arthritis developed within a few days after gonorrhœa was contracted, but, as a rule, it appears between the third and fifth weeks. It may, however, develop after months, as a result of chronic posterior urethritis, and the patient cannot be considered as having escaped this complication until it is positively known that the urethra no longer contains gonococci. Acute gonorrhœal arthritis, whether monarticular or polyarticular, begins with a feeling of dull pain in one or more joints, followed quickly by redness and swelling, as the inflammation increases. Pressure over the tendons and insertions of the ligaments give pain before effusion has taken place. There is a rise in temperature, possibly as high as 104° F., but generally there is a marked contrast between the amount of swelling or pain and the temperature. Effusion occurs rapidly, the tension produced aggravating the pain. Extension of the inflammation along the muscle-sheaths prevents motion, and causes pain to be felt above and below the joint. In a few days the temperature drops to nearly normal, rising again if a new articulation becomes involved. Although the tension in the joint may become so great as to make suppuration seem inevitable, as a rule it does not take place, and the disease shows a tendency to become chronic, with occasional acute exacerbations. The endocardium and pericardium are not involved as frequently as in articular rheumatism. The urethral discharge is not diminished or suppressed by the appearance of the arthritic complication. In chronic gonorrhœal arthritis or hydrarthrosis the

invasion may be so slow and the constitutional affection so slight that the first symptom which attracts the patient's attention may be the swelling and restricted motion of the joint. The knee, ankle and elbow are usually affected. Absorption, as a rule, is very slow, and deformity may result from adhesions due to inflammatory changes, or the exudate may develop organised fibrin, with resulting ankylosis of the articulating surfaces. The diseases with which gonorrhœal arthritis is most likely to be confused are articular rheumatism and tuberculosis of the joints. The persistence of pain in one articulation, the chronicity of the effusion, and the lack of conformity between the local lesion and the constitutional symptoms are the main differences from articular rheumatism. The diagnosis from tubercular inflammation is facilitated by the bacteriological examination of the contents of the joints, and of any existing urethral or vaginal discharge. In cases in which the result of such examination is negative, the differentiation is very difficult to make, especially in married women, with possibility of venereal disease contracted from the husband, and without a tuberculous history.

The treatment of gonorrhœal arthritis has been most unsatisfactory, and will continue so until a means has been discovered for discouraging the development of the gonococcus, when once it has entered the circulation, or has been deposited in locations which cannot be reached by topical applications. White recommends **Quinine** in doses of 5 to 10 grains, three times a day, and **Biniodide of Mercury** $\frac{1}{10}$ of a grain until improvement sets in. **Mercury,** in various forms, pushed to its constitutional limit, has been advocated by many authorities, and in some cases can be used to advantage. **Copaiba,** in large doses, and **Salol** are also, at times, of great value. If the swelling and pain are great, the application of leeches may give temporary relief. The use of the Pacquelin cautery, applied daily, is of benefit, especially in the subacute stage. Hot applications of a lead and opium solution may be used to alleviate pain, and the joint should be wrapped in cotton, bandaged lightly. If the case has become subacute or chronic, with delayed resolution and impairment of motion, massage, and particularly forcible, gradual flexion of the joints hastens the return of voluntary motion. Too much stress cannot be laid upon this point. By breaking up any adhesions before they have had time to become thoroughly organised, not only is the function of the joint restored sooner, but also possible permanent impairment of motion is prevented. Force, however, should only be used in flexion. If adhesions keep the joint in a position of flexion, the tendons should be severed before forcible extension is attempted. Surgery is being more

frequently resorted to, and the aseptic opening of the joint, in severe cases, followed by irrigations with an antiseptic solution, is a rational and often most satisfactory procedure. If the arthritis is due to specific urethritis, the urethra should receive especial attention, and the patient should be warned, on his recovery, of the great danger of permanent disability should he again acquire gonorrhœa.

Muscular Rheumatism.— Erben[13] contributes a paper of great importance to surgeons, showing the danger incident to the too common diagnosis of obscure pain as muscular rheumatism.

In twelve cases of alleged rheumatic wryneck he discovered that not one was really due to rheumatism. The abnormal position was not caused by pathological contraction of the sternocleidomastoid, but was primary and was assumed to lessen pain; the muscle contracture was secondary and due to position. The pain and tenderness were in all cases on the convex side, and not closely related to the muscles. Tenderness was especially elicited over the fourth upper spinous processes. In three instances the great occipital nerve was tender on pressure. In one case the smaller posterior superior nerve was tender over the mastoid process. In every instance the lateral flexion of the rigidly held head could be increased without pain. Sometimes rotation towards both sides was possible; often turning towards the convex side was difficult. None of the muscles of the concave side showed increased tonus. Pain was not caused by visible extension of the neck; hence spasm was not the cause of the torticollis. It was evident that the joints on the convex side of the cervical spine were diseased, or that the roots of the nerves passing out at this side were affected. This diagnosis was not nullified by the possibility of rotation, since this motion takes place almost between the atlas and axis.

Two hundred cases of lumbago were observed. In not one was muscular disease noted. In one hundred and nineteen cases there was affection of the articulations of the lumbar vertebræ characterised by tenderness to pressure over the joints, limitation of lateral flexion and lateral curvature, the concavity of this curvature being toward the sound side. Twenty-one cases were instances of neuralgia of the cutaneous nerves which have their origin in the three lower lumbar branches. The region of the vertebral articulations was not tender. In some cases the diagnosis could not be formulated. Some were alcoholics, some were beginning tabetics, and one was suffering from osteomalacia.

This study is extremely important, since it shows how often the surgeon is led to an erroneous treatment by the very common

diagnosis of all obscure back pain as rheumatic ; though a more accurate knowledge as to the true cause of this pain may not lead to the finding of any specific remedies for it, it will at least prevent the needless saturation of the systems of patients with anti-rheumatic medications.

The following has been recommended for lumbago[19] :—

℞	Potassii Iodidi	℥ss	Spiritus Ætheris Nitrosi	℥ss
	Tincturæ Opii Deod.	℥ij	Aquæ Destillatæ	℥xij
	Sp. Lavandulæ Comp.	℥j		

M. Sig.—Two tablespoonfuls twice daily.

Chronic Rheumatism.—Schüller[20] describes a form of chronic joint disease of supposed microbic origin, to which is given the name of polyarthritis chronica villosa. This disease, which is characterised by considerable swelling of the affected joint, consists in a chronic inflammatory hyperplasia of the synovial tufts, and differs from arthritis deformans in the absence of any morbid change in the bone and articular cartilage. This condition is regarded as quite distinct from acute rheumatism, and as having no etiological relation to either tuberculosis or syphilis. The author reports favourably of his operative treatment in such cases. This consists in opening the affected joint, in excising the enlarged synovial tufts, in washing out the cavity with sublimate solution, and, finally, by carefully injecting a mixture of **Guaiacol, Iodoform** and **Glycerin.** This treatment, which in several cases was practised on two or three joints in the same patient, results, it is stated, in complete relief from pain, and in decided improvement of the function of the limb, and, in the more recent cases, in full restoration of its movements. In some instances the improvement in the joint thus treated was followed by diminished swelling in other affected joints which had not been submitted to operation.

Hirschkon[21] gives a short account of internal and external therapeutic methods useful in chronic articular rheumatism, and then devotes himself to the consideration of the topical use of **Naphthalin,** which he has employed in twenty cases. The naphthalin is merely laid over the affected joint and covered with several folds of linen, the application being renewed twice daily. He claims for naphthalin a vascular excitant action, an absorptive influence upon old and torpid exudates, and a remarkable sedative effect upon the painful rheumatic nodes.

For cases of chronic rheumatism a favourite prescription in Dr. Eshner's[22] clinic is as follows :—

℞	Sodium Iodid.	℥iv	Ammon. Tinct. of Guaiac	
	Wine of Colchicum	fl.℥iv	Fl. Ext. of Erythroxylon āā	℥vij
	Fl. Ext. of Cimicifuga	fl.℥vj		

M. Dose.—One teaspoonful thrice daily,

Xiphoid Rheumatism.—Hirtz and Roustan [23] draw attention to a condition which hitherto has not attracted much notice, namely, a rheumatic inflammation of the sterno-xiphoid articulation. This may in some instances escape diagnosis from the fact that no other articulation may be affected. There may be considerable dyspnœa from hampered movements and severe epigastric pain. Pressure over the lower part of the sternum is accompanied by pain, and in some cases, should the stomach become distended as by flatulent dyspepsia, there may be considerable suffering, which it is not surprising to hear is referred to the stomach itself. Examination of the part may show some swelling over the xiphoid cartilage. Prognosis in these cases is good in the event of a correct diagnosis being made. The treatment recommended by the authors is the application of a counter-irritant, preferably a blister, accompanied by general anti-rheumatic treatment, such as salicylates.

Intermittent Hydrarthrosis of Neuropathic Origin.—Féré [24] reports five cases of a morbid condition denominated intermittent neuropathic hydrarthrosis. This condition, which is stated to be a rare one, is characterised by intermittent and, in some instances, regularly periodical attacks of swelling of one or several joints, generally without fever and without any local sign of inflammation. In the intervals of the attacks the affected joints become quite healthy, this clinical character distinguishing intermittent hydrarthrosis from those irregular forms—*hydrarthrosis à répétition*—in which acute or subacute attacks occur in the course of some chronic articular affection. The knee is the joint that is most frequently attacked, in some cases alone, occasionally with other joints. All the joints, however, may be affected either simultaneously or alternately. This joint affection is, as a rule, a very mild one. Although there may be considerable distension of the joint, there is but very little local pain, and in most cases there is an absence of general disturbance and freedom from fever. In discussing the origin of this form of hydrarthrosis, the author, whilst not excluding malaria, infective diseases, and blood-poisoning as occasional causes, attributes much importance to its frequent association with certain neuroses. Of the cases reported in this paper, it occurred with hysteria in three, with epilepsy in one, and in the remaining case with general paralysis of the insane.

REFERENCES.—[1] "Lancet," Aug. 2, 1899; [2] "Brit. Med. Journ.," Jan. 28, 1899; [3] Ibid., March 23, 1899; [4] Ibid., Sept. 17, 1898; [5] "Lancet," May 20, 1899; [6] Ibid., No. 3902, 1898; "Amer. Journ. Med. Sci.," Oct., 1898; [7] "Therap. Gaz.," May 15, 1899; [8] "Med. Rec.," April 15, 1899; [9] "Treatment," May 11, 1899; [10] "Therap. Gaz.," Nov. 15, 1899; [11] "La Presse Médicale," Feb. 1, 1899; [12] "Amer.

Med. and Surg. Bulletin," Sept. 25, 1898 ; [13] "Wien. med. Ztg.," xliii, Nos. 5 and 6 ; [14] "New York Med. Journ.," May 6, 1899 ; [15] "Deut. Med. Woch.," No. 23, 1898 ; "Med. and Surg. Rev. of Rev.," Jan., 1899; [16] "Wien. Med. Presse," Nov. 6, 1898 ; "Med. and Surg. Rev. of Rev.," Jan., 1899 ; [17] "Braithwaite's Ret.," June, 1899 ; [18] "Centralb. f. Chir.," Sept. 10, 1898 ; "Therap. Gaz.," Jan. 16, 1899 ; [19] "Med. Rec.," April 15, 1899 ; [20] "Brit. Med. Journ.," Nov. 6, 1899 ; [21] "Wien. Med. Blatter," 98, No. 52 ; "Inter. Med. Mag.," June, 1899 ; [22] "Philad' Polyclinic," Nov. 6, 1899 ; [23] "Journ. de Méd.," April 10, 1899 ; "Brit. Med. Journ.," July 29, 1899 ; [24] "Revue de Chir.," July, 1898 ; "Brit. Med. Journ ," Sept. 8, 1898.

RHEUMATISM (Gonorrhœal). (See "Joint Diseases," and "Rheumatism and Gout.")

RHINITIS. (See under "Nose.")

RINGWORM. (See "Tinea Trichophytina.")

RÖTHELN. *Henry Dwight Chapin, M.D., New York.*

Dr. Forcheimer [1] describes an *enanthem* in German measles that is very short lived ; it fades away within the first twenty-four hours, and then come certain results of involution, not present in the majority of cases. It is localised upon the uvula and soft palate, and rarely invades the hard palate. It is the same eruption that is found upon the skin, characterised then by its size of efflorescence, its arrangement, the absence of great infiltration, and, above all, by its colour, this being a pure pinky rose-red, almost exactly the same as the roseola of typhoid fever. The claim that this enanthem is distinctive can be defended by comparison with the enanthem of those two diseases with which rubella is confounded. A glance at these will suffice to establish this proposition. In scarlatina the enanthem appears from twelve to twenty-four hours before the eruption ; it appears on the pillars of the fauces in the form of the characteristic puncta, then rapidly spreads over the mouth in the form of a scarlet-red coalescing eruption, which finally ends in desquamation, producing the strawberry tongue and lasting well into the second week of the disease. In measles the enanthem begins upon the soft palate from thirty-six to forty-eight hours before the exanthem in the form of purplish or bluish papules, arranged crescentically, extends over the cheeks, accompanied by the blue tongue ; it is at its maximum with the beginning of the eruption, and may take as long as three or four days to disappear. It will be seen, therefore, that in all respects does the enanthem of rubella differ from that of scarlatina and measles, and when seen can be utilised with certainty for differential diagnosis.

REFERENCE.—[1] "Arch. Ped.," vol. xv, No. 10, 1898.

SALPINGITIS (Gonorrhœal).

C. F. Marshall, M.D., B.Sc., F.R.C.S.

J. W. Taylor, in a paper read before the British Gynæcological Society, made the following propositions: (1,) A large number of women who are suffering from tubal disease have been at some time or another exposed to the infection of syphilis as well as gonorrhœa, and these cases show marked improvement after a course of mercury and iodides, and under this treatment, unless pyosalpinx occurs, physical signs usually disappear; (2,) Many cases in which there is no history of syphilis, including cases in which there is true history of gonorrhœa as the starting point of tubal disease, similarly improve and get permanently well under the same course of treatment, provided pyosalpinx and its complications do not occur; (3,) Occlusion of the tubes and peritubal adhesions consequent on gonorrhœal salpingitis have no direct specific causation, and are a secondary mechanical result of the local peritonitis caused by the salpingitis. Their absorption will therefore not be secured by the cure of the gonorrhœa, and sterility may persist; (4,) In gonorrhœa of the pelvis a certain number of cases remain, especially those complicated with other diseases, such as fibroids of the uterus, in which removal of the organs affected is required. In these cases vaginal hysterectomy, with or without the removal of appendages, is the best treatment.

REFERENCE.—"Brit. Med. Journ.," May 20, 1899.

SARCOMA. (See under "Arteries.")

SCARLET FEVER. *Edwd. Wilberforce Goodall, M.D.*

The question of the length of infectivity of patients recovering from various infectious diseases, is one of great practical importance, especially to those who are engaged in the administration of isolation hospitals. It occasionally happens that a patient recently discharged from a fever hospital, either apparently or really gives rise to fresh cases of the disease from which he has just recovered. These cases are known as "return cases," and are met with more frequently in connection with scarlet fever than any other infectious disease. Their etiology has been very fully investigated by Millard.[1]

The definition of a "return case" must necessarily be arbitrary. Millard includes all cases occurring within six weeks of the return home of the patient discharged from hospital ("infecting case"). He found that out of four thousand eight hundred and ten patients discharged from the Birmingham City Hospital during a period of two and a half years, in one hundred and fifty-eight instances (3·4 per cent.), a fresh outbreak of scarlet fever arose within the six

weeks, and most of these within three weeks. It is often alleged in complaints made by the friends of the patient or by sanitary authorities, that the cause of the "return case" is to be sought in the insufficiency of the period of isolation of the "infecting case." On this point Millard finds that the proportion of "infecting cases" discharged after an isolation of less than six, or seven, or eight weeks, is about the same as the proportion of all cases isolated for these periods; the proportion of all cases isolated for eight to nine or nine to ten weeks, is considerably greater than the corresponding proportion of all cases; and in cases isolated for a longer period than nine weeks, the proportion of infecting cases is much less than that of all cases. The explanation of these figures he gives as follows: "The patients discharged after the shorter periods of isolation, that is, under eight weeks, are principally the simple uncomplicated cases, wherever the complicated cases—more especially those complicated with otorrhœa or rhinorrhœa—that is, the cases most calculated to carry infection, are always detained longer. With this discrimination we see that the period of isolation becomes a very important factor, and that after twelve weeks the risk of infection becomes exceedingly small. The safety produced by such prolonged isolation is probably greater than appears merely from the table, because the cases leaving hospital after twelve weeks include those chronic and incurable cases which have to be sent out at last in desperation."

Millard enters at some length into the question of the relation between the condition of the "infecting case" on its discharge, and its infectivity. From the figures he gives, it appears that a discharge from the nose, whether existing at the time of the patient's leaving the hospital or arising shortly afterwards, is undoubtedly to be looked upon as infectious; as are, though to a much smaller degree skin eruptions, sores, etc., and otorrhœa. The desquamation of the feet, which commonly persists for a considerable time after desquamation has ceased elsewhere, is probably harmless.

An interesting case of scarlet fever, complicated with acute suppurative otitis media and acute hæmorrhagic septicæmia, in which there was reason to believe that the patient's life was preserved by the use of anti-streptococcic serum, has been recorded by Low.[2] During a period of six days, 263 c.c. of the serum were subcutaneously injected.

Stewart[3] draws attention to the value of **Tracheotomy** in certain cases of septic scarlet fever. Of four cases in which he performed this operation, three recovered, one being an infant only eleven weeks old. In the fatal case, relief was given. The cases in which this

operation is indicated, are those in which extreme swelling of the fauces obstructs respiration. As long as the patient is awake, he manages fairly well; but directly he falls asleep, he is awakened by the dyspnœa. Consequently he gets practically no sleep, and soon becomes exhausted. Stewart's experience certainly shows that under these conditions tracheotomy is of great value.

REFERENCES.—[1] "Brit. Med. Journ.," Sept. 3, 1898; [2] "Lancet," March 19, 1898; [3] "Report of Stat. Com. of Met. Asyl. Board for 1898."

SCIATICA. *Græme M. Hammond, M.D., New York.*

According to Kühn,[1] deep injections of **Antipyrine** into the muscles in the region of the sciatic nerve promptly relieves sciatica. He employs a long needle, and makes the injections at a point nearly midway between the tuberosity of the ischium and the great trochanter, and a little below a line joining these points.

Gennatz[2] advises painting the painful tract with from two to four coats of the pure official hydrochloric acid. Some tingling results, but it is quite bearable, and thin vesicles, filled with bloody serum, appear. The wounds are dressed with absorbent cotton. The painting is repeated daily or every other day, care being taken to avoid applying the acid to the vesicles already produced. Usually from three to five applications are sufficient, but he has known the treatment to fail in a rebellious case.

REFERENCES.—[1] "Amer. Med. and Surg. Bull.," July 25, 1893; [2] "New York Med. Journ.," Aug. 20, 1898.

SCLERODERMIA. *T. Colcott Fox, M.B.*

Leredde and Thomas[1] report the case of a man of forty suffering from sclerodermia since the age of thirty-two. The plaques were numerous, generalised, and symmetrical, and coalesced until the skin was uniformly affected. The autopsy disclosed a very atheromatous aorta (the man had suffered from syphilis), and completely calcified arteries of the limbs (chronic arteritis). No nerve changes were found.

The pathogenesis of sclerodermia is very obscure. It is generally believed to be of nervous origin: (1,) Owing to the distribution in nerve territories, though vessels have a good deal the same distribution; (2,) The concurrence of hemiatrophia and sclerodermia; (3,) The occurrence of muscular atrophy, increase in electrical resistance, and rebellious neuralgia. Méry considered the generalised form to be an infective arteritis.

They remark that as yet no changes in the nerve trunks or branches have been detected. Is it due to a toxin?

In the "International Clinics" for 1897, a clinical account was given of a case of sclerodermia in which there was marked hemiatrophy of the face, body and extremities. The woman died after an operation for ovariotomy, and Dr. Lindsay Steven[2] completes the account of the case, which had been under observation for twelve years. The cortical matter of the hemisphere opposite to the atrophic side was perhaps a little thinner. In the spinal cord the gray matter in the anterior horn of the affected side was diminished, the ganglion cells were smaller and less numerous, and their nuclei and plasma granules were less well defined than on the opposite side; and the neuroglia seemed denser. Throughout the cord, medulla and pons, the arteries, especially of the gray matter, were surrounded by spaces, either empty or containing a structureless homogeneous material, and most of the spaces had well-defined margins. The nerve fibres from the cervical and lumbar plexuses showed a well-marked parenchymatous degeneration. Dr. Steven regards the cutaneous disturbance as the consequence of the central changes, but the neuritis he considered as secondary and recent.

Alexander James records two cases of sclerodermia in which cocci were found in the blood from a skin puncture. The organisms in both cases resembled each other closely, but differed in their action on jelly. A similar organism was found in the blood from a skin puncture of a patient suffering from Raynaud's disease, in the same ward.

Hebra treated three cases of sclerodermia by injecting deeply into the interscapular region half a Pravaz syringeful of a 15 per cent. alcoholic solution of **Thiosinamin.** There seemed to be some improvement.

REFERENCES.—[1] "Arch. de méd. expér. et d'anat. path.," Sept., 1898; [2] "Glasgow Med. Journ.," Dec., 1898.

SCLEROTIC. *F. Richardson Cross, M.B., F.R.C.S.*

Grandclément claims that scleritis and anterior sclero-choroiditis, for which he has found all other treatment practically useless, invariably yield rapidly to **Subconjunctival Injections** of a 1 in 1,500 solution of cyanide of mercury.

REFERENCE.—"La Clinique ophtalmologique," Feb. 10, 1899.

SCORBUTUS (in Infants in Australia).

G. Lane Mullins, M.A. M.D., Sydney.

Infantile scurvy is found to be very prevalent in the large cities in Australia. This is probably due to the increased use of artificial foods at an early age. Fresh orange juice, raw beef juice, and unboiled milk, quickly remove the symptoms without the aid of drugs.

SEPTICÆMIA (Gonorrhœal). *C. F. Marshall, M.D., B.Sc., F.R.C.S.*

Thayer and Lazear have published an important monograph on this subject. From an investigation of thirty-two cases the authors conclude that acute gonorrhœal urethritis may be the starting point of severe general septicæmia and its complications. The infection may be mixed or secondary, due to the entrance into the circulation of other organisms than the gonococcus, or it may be purely gonococcal. Endocarditis may occur, and may be transient or lead to chronic valvular lesions, or may end in rapidly fatal ulcerative endocarditis. This complication is generally due to the direct action of the gonococcus, but may be due to mixed infection. The same applies to gonorrhœal pericarditis, a rarer complication. Severe myocardial changes, necrosis, purulent infiltration and embolic abscesses are common in the severe gonococcal septicæmias. Diagnosis may in some cases be made by cultures taken from the blood during life by proper methods. The authors conclude that cardiac disease may be more often due to gonorrhœa than is generally supposed.

REFERENCE.—"Amer. Journ. of Exper. Med.," Jan., 1899.

SEPTICÆMIA (Puerperal). (See "Labour.")

SHOCK. (See "Surgical Shock.")

SINUSITIS (Nasal Accessory, Differential Diagnosis of).

P. Watson Williams, M.D. Lond.

An exact knowledge of the anatomy of the nasal passages was till recently considered superfluous in practice, while the diseases peculiar to this region had hardly been investigated a few years ago; consequently, many practitioners still find much difficulty in diagnosing even some of the commoner affections. It is with the hope that some of the chief points in the diagnosis of acute and chronic inflammation of the accessory sinuses of the nose may be made plain that I venture to offer these brief notes and the plates accompanying them.

It is, of course, necessary to eliminate all the various sources of discharge from the nasal passages proper before diagnosing the source as one of the accessory sinuses. As regards the majority of these various intra-nasal conditions there will generally be little difficulty in making such a distinction, but there are some affections the symptoms of which closely resemble those of accessory sinus disease, and therefore call for special attention. At the same time it must not be forgotten that frequently disease of the accessory sinuses is the secondary consequence of some intra-nasal disease, and on the other hand accessory sinusitis often causes secondary disease in the nasal passages, *e.g.*, mucous polypi, polypoid granulation tissue, etc.,

so that the discharge may be derived from several conditions which may or may not be interdependent.

The conditions which are most likely to be confused with discharge of pus from the accessory sinuses are the presence of a rhinolith, or of a foreign body in one nasal passage, "ozæna," and syphilitic necrosis. The inflammation of the nasal mucous membrane caused by a foreign body may result in copious discharge of foul-smelling pus from one nostril, *the smell being perceived by the patient.* These symptoms at once suggest either empyema of the corresponding maxillary antrum, a foreign body, or syphilitic necrosis. After cleansing the nasal passage, examination with a probe guided by a good light should lead to the detection of a foreign body or of an area of necrosed bone. In atrophic rhinitis with collections of foul smelling secretion, "ozæna," and in syphilitic atrophic rhinitis the intense sickly smell is almost invariably obvious and characteristic to those around, but, as a rule, is *unperceived by the patient*, the sense of olfaction being usually lost.

A discharge of pus associated with nasal polypus usually points to empyema of the antrum, frontal sinus, or ethmoidal cells. If the polypi be large and almost completely filling the nasal passage, it may not be possible to diagnose the source of the pus until these polypi have been cleared away.

Since a knowledge of the anatomical relations of the various sinuses is essential to the understanding of the symptoms produced by sinusitis, a careful study of the illustrations (*Vide Plates XXIII, XXIV and XXV*) will serve to refresh the memory on these points.

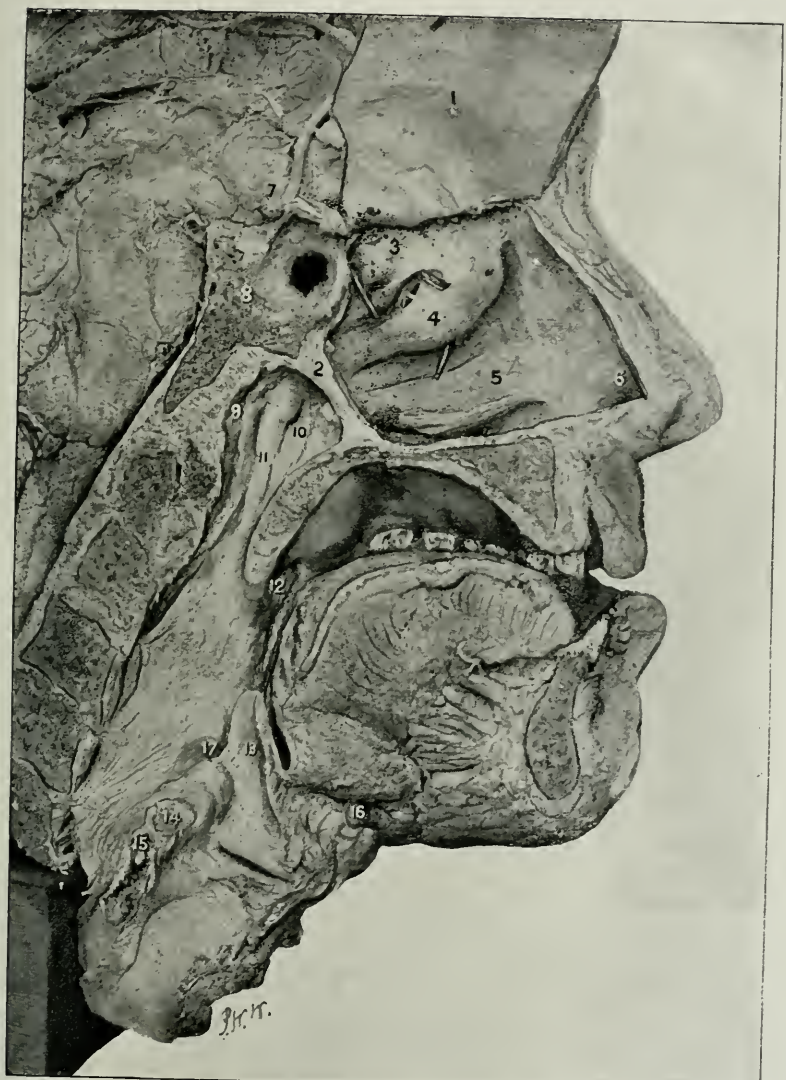
Nasal sinusitis may be clinically grouped thus :—

I.—Catarrhal sinusitis (coryza of the sinus) : (*a*,) With apertures patent ; (*b*,) With apertures closed.

II.—Purulent sinusitis : (1,) Acute : (*a*,) With apertures patent ; (*b*,) With apertures closed ; (2,) Chronic : (*a*,) With apertures patent ; (*b*,) With discharge of pus into the nose.

Many cases alternate between the "closed" and "open" form, these being conveniently termed "alternating."

Catarrhal Sinusitis no doubt very often occurs in association with the inflammation of the mucous membranes of the nose, *e.g.*, in common colds, measles and influenza, and accounts for the temporary aching and sense of weight over the frontal sinuses ; but it is rarely that acute sinusitis is seen by the medical attendant or has any clinical importance except in so far as it may be the precursor of a subacute or chronic purulent sinusitis. Yet occasionally, and especially in influenza and erysipelas, the acute inflammation is attended with



Vertical mesial section of a head. The septum nasi (1) has been cut on three sides and turned up as a flap, so as to expose the outer wall of the left nasal passage: (2) The posterior margin of the septum; (3) The superior turbinal body, separated from (4), the middle turbinal by the superior meatus in which is seen a bristle entering the orifice of a posterior ethmoidal cell; orifices of other posterior ethmoidal cells are seen below the bristle. More posteriorly a bristle emerges from the ostium of the left sphenoidal sinus. Beneath the middle turbinal (4) a bristle has been made to enter the ostium maxillare in the middle meatus; (5) The inferior turbinal beneath which the nasal duct opens into the nose.

blocking of the apertures by which the nasal accessory sinuses communicate with the nasal passages, and then, from acute retention with distension of the affected sinus, a great deal of suffering may be caused, followed by relief when the retained secretion suddenly forces the opening and is poured into the nasal passages.

In the course of an affection attended with acute coryza, acute lancinating pain in the region of any sinus may be due either to acute sinusitis or to irritation of the fifth nerve. But pain attended with marked tenderness on pressure is strongly presumptive of acute sinusitis. Thus, pain markedly increased by pressure over the region of the maxillary sinus, particularly over the point of exit of the superior maxillary branch of the trigeminus, or in the canine fossa, strongly suggests maxillary sinusitis, a presumption further corroborated by redness and tumefaction of the mucous membrane below the canine fossa, pain and periosteal swelling in the roots of the upper bicuspids or molar teeth, and rendered certain by the spontaneous escape of discharge from the nose being associated with relief of pain. If the frontal sinus is the seat of acute inflammation the pain and tenderness will be supra-orbital and in the upper internal angle of the orbit corresponding to the nasal bone, but if the ethmoidal cells or the sphenoidal sinus be affected the pain will be referred to the orbit and occipital region.

Purulent Sinusitis is of common occurrence. The symptoms of *acute* purulent sinusitis are the same as in the acute catarrhal form except that they are apt to be more marked and to be attended with greater constitutional disturbance ; and, as in catarrhal sinusitis, the symptoms are enormously aggravated when, with blocking of the opening of the sinuses into the nose, the cavities become acutely distended by the retained secretions.

In the diagnosis of chronic purulent sinusitis, or empyema of the sinuses, with discharge, we have to take note of many symptoms of different value in order to diagnose and locate the seat of disease, and I propose to follow Lermoyez,[1] who classifies the symptoms under three headings, *viz.*, "presumptive," "probable" and "certain."

After cleansing the nasal passages :—

(*a*,) Pus appears in the middle meatus with the patient in the upright position, or on the upper surface of the soft palate (by posterior rhinoscopy) in the recumbent position.

The pus comes from the anterior group, *viz.*, the maxillary sinus, the frontal sinus, or the anterior ethmoidal cells.

(*b*,) Pus appears in the olfactory fissure, above the middle turbinated body, in the upright position, and in the naso-pharynx above the soft palate and inferior turbinal in the prone position.

The pus comes from the posterior group, *viz.*, the sphenoidal sinus or the posterior ethmoidal cells.

Empyema of the Maxillary Sinus.—The maxillary antrum, or antrum of Highmore, is the largest of the nasal accessory sinuses, and owing to its anatomical relations is the most frequently affected. It is a large cavity giving the prominence to the cheek, its shape being that of a three-sided pyramid with the apex formed by the malar process directed outwards, the base forming the lower two-thirds of the outer wall of the nose, its roof being formed by the orbital plate, the anterior and posterior surfaces by the facial, and the zygomatic surfaces respectively, while the floor corresponds to the alveolar process behind the canine tooth. The ostium maxillare, or its opening in the nasal passage, corresponds with the posterior extremity of the hiatus semilunaris beneath the middle turbinated body, the opening which is obvious in the skeleton being largely covered in with mucous membrane in the living subject. Thus, when pus escapes from the antrum it must appear beneath the middle turbinal ; from this high position of the opening the escape of pus will vary with the position of the head, being more liable to escape freely when the head is low down or with the head lying on a pillow on the opposite side. Thus it is that the patient often comes with the history of intermittent escape of pus from one side of the nose, especially on stooping or on lying down at night. It is this difficulty in the antrum getting emptied and draining freely, even when the opening is not obstructed, that almost ensures its contents becoming intensely fœtid. The roots of the molar teeth are separated by a very thin layer of bone from the cavity and often form prominences in its floor, so that it is easy to understand that dental caries with inflammation of the roots of these teeth should be both a frequent cause as well as a consequence of antral empyema.

Symptoms which are suggestive :—

(1,) Discharge of pus from one nasal passage.

(2,) Intermittence of the discharge.

(3,) Infra-orbital pain.

(4,) Intermittent subjective fœtor.

(5,) Caries of the upper molars.

(6,) Presence of pus in the middle meatus re-appearing immediately after wiping away.

Mesial section of a skull showing the right nasal accessory sinuses. (1) Frontal sinus of the left side, separated by the oblique mesial septum from (2) the right frontal sinus; (3) Crista galli; (4) Cribriform plate.; (5) Sella turcica; (6) Optic foramen; (7) Sphenoidal sinus; (8) (9) Posterior ethmoidal cells; (11) Remains of the middle turbinal bone; (13) (14) Anterior ethmoidal cells; (15) Bulla ethmoidalis; (16) Processus unciformis; (17) Opening into the maxillary antrum; (19) Remains of inferior turbinal bone; (20) Position of the opening of the nasal duct in the inferior meatus; (22) Fronto-nasal duct. The dotted line is drawn from the nasal orifice to the posterior wall of the sphenoidal sinus.

(7,) Lateral thickening of the mucous membrane over the uncifonn process and corresponding surface of the middle turbinal.

If the empyema is closed *the three cardinal symptoms* are :—

(1,) Violent infra-orbital pain.

(2,) Tumefaction of the cheek.

(3,) Tumefaction in the canine fossa.

Symptoms which indicate probability :—

(1,) Fränkel's symptom, the re-appearance of pus in considerable quantity after cleansing the passages, on bending the head forward so as to invert the head.

(2,) Heryng's sign, transillumination with : (*a*,) Appearance of shadow below the eye on the affected side as compared with the normal illumination ; (*b*,) Light reflex from the pupil absent on one side (Davidsohn) ; (*c*,) Subjective sensation of light absent on one side, the eyes being closed (Garel).

Signs which render maxillary empyema certain :—

(1,) Exploratory puncture.

(2,) Exploratory lavage through the natural orifice.

(3,) Exploratory lavage through an artificial opening.

Empyema of the Frontal Sinus.—*Symptoms which are suggestive :—*

(1,) Continuous discharge of pus.

(2,) Situation of pain : (*a*,) Spontaneous, either over the roof of the nose, the supra-orbital region, the centre of the forehead, or sometimes as high as the vertex, ceasing temporarily with the expulsion of purulent matter ; (*b*,) Pain on pressure over the superior internal angle of the orbit.

(3,) Pus in the anterior part of the middle meatus. If polypi are co-existent the pus will be distributed and appear throughout the middle meatus.

Symptoms which render probable :—

(1,) Anterior ethmoiditis almost always accompanies frontal empyema, so that if maxillary empyema is absent, pus re-appears in the middle meatus soon after wiping it away ; frontal empyema probably exists.

Certain indications :—

(1,) Exploratory lavage by the natural orifice through the nose. This is often an impossible procedure, and should only be attempted when it can be accomplished without any force being used in gaining entry to the sinus.

The diagnosis of open frontal empyema is mainly arrived at by excluding other sources of the pus. But with closed empyema the pain and swelling over the supra-orbital area, and in the superior

internal angle of the orbit, and especially the appearance of increased pus discharge on pressure over the latter area, there is rarely room for doubt.

The Ethmoidal Cells are not rarely the seat of inflammation, certainly with greater frequency than is generally believed. Fortunately, their anatomical configuration tends to fairly free drainage provided the secretion is fairly fluid and no polypi or other growths obstruct its escape. The ethmoidal cells consist of a number of cells interposed between the os planum of the ethmoid, which forms the inner wall of the orbit, and the outer wall of the nose in its upper third. Posteriorly they are completed by the outer surface of the body of the sphenoid outside the sphenoidal sinuses, and the roof of the upper cells is formed by the ethmoidal notch of the frontal. The life-size plates serve to show not only the relations of these cells, but they give some idea of their average size. They are often larger than is generally supposed, and when the sphenoidal sinus is small they are usually especially large. The row of four cells *(Plate XXV)*, laid open by cutting away the very thin partition which separated them from the orbital cavity vary from three-quarters to half an inch vertically and from quarter to half an inch in width and depth, and thus, even when lined with mucous membrane, would be capable of containing a considerable amount of secretion. The level of the cribriform plate in the skull depicted corresponds to a line drawn antero-posteriorly through the centre of the largest cell ; it is very obvious that great caution is required in opening up these cells from below in order to avoid puncturing the very thin and sometimes softened layer of bone which divides the cells from the dura mater, while it will be readily understood that in cases of ethmoidal sinusitis there is always a risk of infective meningitis from infection or upward extension of the mischief, and that this is a very serious menace to life if the contents of ethmoidal cells cannot find an exit, and cause distension from yielding of the thin walls to the increasing pressure. From the bulging of the external walls into the orbital fossa the eye becomes displaced outwards and upwards or downwards, and sometimes it becomes acutely inflamed and the lids swollen.

Usually the posterior ethmoidal cells communicate with the nose by one or more openings in the superior meatus a little in front of the opening of the sphenoidal sinus, the pus appearing in the olfactory fissure above the middle turbinal, while the cell forming the bulla ethmoidalis and other anterior cells empty into the middle meatus near the posterior extremity of the hiatus semilunaris. Thus it is that, if after cleansing the nasal passages pus appears above the middle

Skull (natural size) showing the ethmoidal cells (2) (3) (4 (5) opened from the inner wall of the orbital cavity. (1) The lacrymal duct. Below the orbit the maxillary antrum has been laid open. Towards its floor transverse septa (6 (7) are seen traversing the cavity and forming pockets.

turbinal, it probably comes from the sphenoidal sinus or from the posterior ethmoidal cells ; while, if it comes from beneath the middle turbinal, it probably comes from the antrum of Highmore, the anterior ethmoidal cells, or else from the frontal sinus which opens into the hiatus semilunaris too. The conditions are often complicated by the presence of polypi and soft fungating granulations, but, when the anterior ethmoidal cells are diseased, the middle turbinal itself will often be found soft and gelatinous on probing or on cutting with forceps.

Empyema of the Anterior Ethmoidal Cells.—*Suggestive symptoms :*—Very much the same as those of frontal sinus empyema, *viz.*, unilateral discharge of pus, continuous, non-fœtid, spontaneous supra-orbital pain. But there is usually a point of tenderness to pressure corresponding to the lachrymal bone.

Signs of probability :—

(1,) On transillumination, the absence of the normal light spots on the side of the nose. A sign suggestive if present, but of little negative value as it is often absent.

(2,) The presence of polypi and granulation tissue beneath the middle turbinal.

Certain signs :—Softening of the middle turbinal ascertained by probing or by cutting forceps, and appearance of pus on opening the bulla ethmoidalis.

Posterior Ethmoidal Sinusitis.—If pus appears in the olfactory fissure on anterior rhinoscopy, and on posterior rhinoscopy in the upper half of the choanæ narium it probably comes from the posterior ethmoidal cells or sphenoidal cells, that is, of course, if intra-nasal sources are excluded. The symptoms and location of the purulent discharge so closely resemble those of sphenoidal sinusitis that they can hardly be distinguished except by excluding sphenoidal sinusitis.

Sphenoidal Sinus Empyema.—The deep-seated anatomical position of the sphenoidal sinus, while rendering it less liable to catarrhal or purulent sinusitis, makes it all the more difficult to diagnose these conditions when they do exist, and, as a matter of fact, sphenoidal sinusitis is less rare than it is generally believed. The roof is formed by the sella turcica and optic groove, the lateral walls by the carotid and cavernous groove and body of the sphenoid ; posteriorly it may reach almost to the foramen magnum, while the floor and anterior surfaces are formed by the basilar process and sphenoidal turbinated bones respectively. Each sinus opens by an aperture in the upper part of the anterior wall either into the choanæ narium near the roof

of the nasal passages or communicates with the posterior ethmoidal cells. The sinuses are very variable in size, and often the two are very unequal, or their septum may be so deficient that they form one sinus. In a series of cases I examined *post-mortem*, one, a female, had a left sphenoidal sinus with a capacity of 7·6 c.c., the right sinus being small, and in a male the two sinuses together had a capacity of 10·0 c.c. Obviously the amount of discharge from the sphenoidal sinuses may be very considerable in amount.

Suggestive Symptoms of Sphenoidal Sinusitis :—

(1,) Spontaneous pain and sense of weight in the centre of the head or referred to the back of the eyes or occiput.

(2,) Lacrymation, photophobia, amblyopia, amaurosis.

(3,) Irritation of the spheno-palatine ganglion, and infra-orbital pain.

Signs of probability :—

(1,) Pus appearing on one side in the olfactory fissure, or, on posterior rhinoscopy, in the roof of the naso-pharynx and above the middle turbinated body, sometimes dark and fœtid.

(2,) The presence of posterior ethmoiditis and polypi confined to the roof of the naso-pharynx.

(3,) Pus appearing intermittently in considerable amount in the naso-pharynx with marked remission of subjective symptoms.

Signs of certainty :—

(1,) The appearance of pus escaping from the ostium sphenoidale.

(2,) Appearance of pus on catheterisation and aspiration of the sinus through the natural opening.

(3,) Appearance of pus on puncture and aspiration of the sphenoidal sinus through the anterior wall.

It must always be borne in mind that the existence of sinusitis in one cavity by no means excludes a co-existent sinusitis of any of the other sinuses.

REFERENCE.—[1] "Therap. des maladies des Fosse nasales, des sinus de la Face et du Pharynx nasal," vol. ii, p. 95, et seq.

SKIN GRAFTING (By Thiersch's Method).

Priestley Leech, M.D., F.R.C.S.

Barker[1] gives some good hints on this subject. If the surface upon which the graft is to be placed is not in a state of active vitality, the latter will not take root, even if the surface is aseptic. Hence, to attempt to graft upon surfaces which, however aseptic, are lowered in vital force by congestion due to varicose veins, by syphilitic infiltration, or tuberculous or cancerous deposit, is to invite failure. Too strong germicides do harm by not only destroying the germs, but also by

destroying or lowering the vitality of the granulation cells. The razor is best sterilised in **Spirit**, as it does not spoil the fine cutting edge like boiling does; later, and during the operation, it should be dipped in a mixture of glycerin, 25 per cent.; spirit, 25 per cent.; distilled water, 50 per cent. This mixture lubricates the razor and enables the thin graft of epidermis to slide or float out on the steel. The skin of the thigh from which the grafts are taken is prepared as follows: A warm bath is first taken two days before; and the thigh is then briskly rubbed with spirit, and then wrapped for a couple of hours in a towel wet with 1 in 20 carbolic and covered with oiled silk. This is repeated the next day when there will probably be some exfoliation of epidermis; this is salutary, as it carries off the superficial layers which contain the largest numbers of microbes. The skin now has a rest until a couple of hours before operation, when the carbolised towel is again applied and left on till the patient is on the table. Any bleeding of the wound to which the graft is to be applied is checked by pressure and the bleeding vessels closed by pressure forceps. The razor wet with the glycerin mixture is used to shave off from the thigh the thinnest possible graft down to the papillary layer; if it includes any of the latter it will curl up. The larger the graft, if thin, the better. As the graft lies on the razor it may be spread out with the fingers or forceps, and a sterile sponge is taken and pressed against the graft; the razor is drawn away leaving the graft on the sponge. Here it may require to be spread out a little more. The wound is now uncovered, and if oozing has ceased the graft sticking to the sponge is pressed down upon the wound where it will adhere; then another graft is placed, overlapping the first; and so on until the wound is covered. A large pad of sterile gauze is laid gently over the whole wound after each graft, and gently pressed upon by an assistant until the next graft is put on, when the pad is again laid down. Each time it removes all moisture. It is a mistake to scrape too deeply through an ulcer, as fibrous tissue is left for its base which is unsuitable for grafting on. In any case the dressing should be a pad of sterile gauze or salicyclic wool pressed evenly into every corner of the wound upon the grafts. It should be left untouched for six or seven days, and should then be soaked in lotio boracis until quite soft before being loosened. Such a dry dressing will form a hard cake at the end of a week or so, firmly adherent to the grafts, and there might be some fear that it will pull off the latter when removed; but if the grafts are not firmly united at the end of a week they will not unite at all, and had better be removed.

REFERENCE.—[1] "Practitioner," Oct., 1898.

SMALL-POX. *Edwd. Wilberforce Goodall, M.D.*

In a paper entitled "Some Clinical Observations on Variola," Lindsay[1] gives some useful hints as to treatment. In the early stages of some cases **Strychnine** and **Digitalis** seemed to give the best results. But most reliance was placed upon **Feeding** with milk, meat essences, and stimulants, and careful nursing. **Baths** were liable to cause collapse in the early stages of the disease. They were found most useful in the pustular stage. **Masks of Lint,** soaked in **Boracic Lotion** and kept constantly applied to the face, appeared to aid in clearing off the purulent mass, and in keeping down the offensive odour. For the backache, **Salicylate of Soda** is recommended; and for the headache, **Antipyrine.** Inhalations of **Tinct. Benzoin. Co.** relieved the sore throat, while in severe cases, much comfort to the patients resulted from syringing out the nose and mouth with **Liq. Sodæ Chlorinat.**

Lindsay treated six cases with **Anti-streptococcic Serum.** Apparently this was employed in the pustular stage. The prognosis at the time was very grave. Four of the cases recovered. The temperature was lowered by the injections, and in the recoveries the attack appeared to be cut short. Complications, such as so often arise, did not occur.

These observations were made in the Middlesborough epidemic.

Kolbossenko[2] states that good effects follow the application of the following ointment to the skin from the commencement of the eruption to the stage of incrustation :—

℞ Ichthyol	10 parts	Lanolin	20 parts
Oil of Sweet Almonds	60 ,,		

References.—[1] "Guy's Hospital Gaz.," Aug. 20, 1898; [2] "Monats. f. Prack. Dermatologie," May 1, 1898.

SNAKE BITE. *James Cantlie, F.R.C.S.*

Antivenin.—Staff-Surgeon O. W. Andrews,[1] R.N., in a paper read before the British Medical Association Annual Meeting, at Portsmouth, deals with well nigh the whole subject of antivenin, its production and application. Poisonous snakes are met with in all tropical countries except the Pacific Islands, and in most temperate regions except New Zealand. Venomous snakes are divided into two principal classes : (1,) *Colubrine*, including cobras, mocassins and coral snakes, black and tiger snakes, and deaf adders ; (2,) *Viperine*, including vipers, rattlesnakes, puff-adders, etc. Surgeon Andrews describes the method of the collection of the venom, the composition of the snake venom, and the symptoms of snake poisoning. The composition of the venom, according to Dr. C. J. Martin,[2] consists of coagulable proteid and non-coagulable proteid. The former may be regarded as

albumoses rather than as globulins, the albumoses being those known as hetero-proto-, and deutero-albumose. The venom of snakes is not a simple poison, but contains at least two distinct poisons; one is destroyed by heating the solution of venom to 85° C., the other when a heat of 100° C. is reached is not destroyed. Boiling the venomous solution, however, for twenty minutes destroys all toxicity. M. Calmette maintains that the action of antivenin is physiological and not chemical. By its use the phagocytes of the blood are stimulated to absorb and digest the venom. The dose of serum required to protect a man against a lethal dose of the most venomous serpents is from 10 c.c. to 20 c.c., but it may be increased with benefit up to 30 c.c. or 40 c.c. No ill effects attend the injection of the serum.

Although provided with a preparation of antivenin to treat a person bitten by a poisonous snake, it is imperative that ligatures should be applied above the seat of the bite and that calcium hypochlorite or chloride of gold be injected around the seat of the wound.

The method which Calmette[3] recommends for estimating the antitoxic power of this serum is as follows: The dose of venom which will kill a rabbit of two kilos weight in from fifteen to twenty minutes is determined; then the minimum amount of serum which will prevent death when injected intravenously five minutes before the above venomous fluid is administered is ascertained. This problem is worked out by injecting various quantities of serum. If 1 c.cm is able to accomplish this, Calmette says the serum contains 2,000 immunity units per c.cm, or 20,000 per 10 c.cm.

Dr. C. G. Martin[4] gives his experience of the curative value of Calmette's anti-venomous serum in the treatment of inoculations with the poisons of Australian snakes. The conclusions arrived at by Dr. Martin are that the antivenin of Calmette had a slight but distinct protective effect against one of the constituents of those venoms, but that on account of its slight toxic strength it was practically valueless as a remedial agent in Australia.

REFERENCES.—[1] "Brit. Med. Journ.," Sept. 9, 1899; [2] Ibid., Dec. 17, 1898; [3] Ibid., April 1, 1899, Major Semple and Lamb; [4] Ibid., Dec. 17, 1898.

SPINE AND SPINAL CORD (Surgery of).

J. E. Platt, M.S., F.R.C.S.

But little can be added to the excellent *résumé* of this subject which was given by Mr. William Thorburn in the "Medical Annual" for 1896.

Injuries.—Bolton[1] reviews the treatment of injuries of the spinal

cord. After referring to the fact that experiments upon animals and clinical observation have shown that there is practically no power of regeneration in the spinal cord of mammals, he considers the various kinds of injuries, and arrives at the following conclusions :—

(1,) *Extramedullary hæmorrhage (hæmatorrachis)* is rarely extensive, and probably never occurs in sufficient volume to give rise *per se* to symptoms of compression. It therefore requires no special treatment. Within the dura mater and outside the cord, blood is rarely found, except in small quantities, which have made their way through rents in the dura.

(2,) *Total lesions* of the spinal cord (complete crushing, division, or laceration) are irremediable, and therefore treatment is of no avail.

(3,) *Incomplete lesions* of the cord may be divided into cases in which the cord is injured by agencies acting from without, such as knives, spicules of bone, etc., and cases in which there is hæmorrhage into the cord-substance (hæmatomyelia). The prognosis and treatment of these cases he sums up as follows : (*a*,) In hæmatomyelia the clot is absorbed and is replaced by fibrous tissue, or more rarely its site remains as a cavity. Irregularities in the circulation in surrounding parts adjust themselves, and there may be great amelioration of the symptoms, but no remedial treatment is possible ; (*b*,) Partial contusion of the cord results in permanent destruction of cells and fibres ; repair takes place by cicatricial tissue, and disturbances of circulation adjust themselves ; no treatment is available ; (*c*,) In open injuries further damage to the cord can be limited by the removal of foreign bodies and by the maintenance of asepsis, but such parts of the cord as are already destroyed are beyond treatment.

Noble Smith[2] sums up the treatment of fracture-dislocation of the spine in the following way : (1,) Fix the spine in every case ; (2,) Attempt reduction if there is any distinct displacement ; (3,) If there is any displacement of bone obviously causing pressure upon the cord which cannot be relieved by reduction, proceed at once to perform an open operation ; (4,) If no displacement obviously causing pressure exists, wait a short period of time to see if any restoration of function will take place without further interference ; (5,) If, after waiting this period of time, no sufficient improvement shows itself, and the symptoms do not indicate complete division of the cord, cut down upon the spine and perform *laminectomy*, or whatever other operation is necessary to relieve the pressure. He quotes several cases in which marked relief has followed the operation of laminectomy.

Cushing[3] records two interesting cases of gunshot wounds of the spine in which the missile lodged in the centrum of a vertebra without directly injuring the cord, but which nevertheless presented symptoms of hemilesion. In both cases a considerable degree of recovery followed. He discusses at great length the cause of the symptoms in these cases, and comes to the conclusion that paralytic symptoms following injury to the cervical region in which the cord is not directly injured, are usually due to hæmorrhage into the substance of the cord. This hæmorrhage usually takes place into the lower part of the cervical enlargement, and as a rule affects only one side at first. The prognosis is good except in cases of gunshot wounds complicated by sepsis.

Prewitt[4] records a case of gunshot injury of the spine in a boy aged fourteen years, in which the lamina of the third cervical vertebra was driven inwards by the bullet and pressed upon the cord. The bullet itself lodged in the spinal canal. There was complete paralysis of the arms and legs, and the respiration was purely diaphragmatic. Removal of the bullet and of the depressed fragments of bone was followed by gradual improvement, and ultimately the boy made a complete recovery. After reviewing the writings of others, Prewitt comes to the conclusion that the surgeon should explore the wound in all these cases, provided that an accessible part of the spine is involved, and unless the general condition of the patient forbids operation.

Non-tuberculous Inflammations of the Spine.—Myers[5] read a paper on this subject at a meeting of the New York Academy of Medicine in February, 1898. He described the following forms of inflammation of the spine: (1,) *Syphilitic:* This may occur in any part of the vertebral column, more particularly the cervical region, and may involve the bone or the periosteum. In the cases of two boys, whose histories were described, the cervical and dorsal regions were affected respectively. In the former there was wry-neck, and in the latter kyphosis. Pain and rigidity were present. Both patients were relieved by **Mechanical Treatment.** Syphilitic affections of the spine are extremely difficult to diagnose from tuberculous affections. (2,) *Rheumatic:* Rheumatoid arthritis, when it occurs in the spine, is usually accompanied by a similar affection of other joints. It gives rise to slowly-increasing deformity with a varying amount of pain. Mobility and pain decline together, and the latter ceases when ankylosis occurs. The cervical part of the spine is least affected. One of the speakers in the discussion on Myers' paper drew a clear distinction between spinal rheumatoid arthritis and rheumatic disease of

the spine. The latter usually affects the lower dorsal and upper cervical regions, rarely exhibiting cartilaginous and osseous changes, and fibrous ankylosis due to ligamentous changes in only very exceptional cases and in patients advanced in years. In such cases the treatment usually employed in rheumatism gives good results. Rheumatoid arthritis of the spine, on the other hand, exhibits muscular atrophy, deposits about the joints, and characteristic deformities of other affected joints: the ordinary anti-rheumatic remedies, with the exception of **Iodide of Potassium,** are of little avail in its treatment. (3,) *Malignant disease:* Primary malignant growths are very rarely met with in the spine, but secondary growths occur occasionally, more particularly in cases of cancer of the breast. The spinal nerves are often involved in the growth, and hence there is very severe pain. Kyphosis occurs in some cases. Myers considers that severe pain and the occurrence of sensory paralysis before the appearance of motor symptoms are characteristic of malignant disease of the spine. (4,) *Gonorrhœal* inflammation of the spine, the fibrous structures being involved, occurs in some very rare cases. (5,) *Typhoid spine:* An inflammatory affection of the periosteum and other fibrous structures of the spine has been observed in several cases after typhoid fever. (6,) *Infectious* inflammations of the spine have been observed after the exanthemata. They usually occur in the cervical region, and are probably due to spreading of infection from the throat. (7,) *Traumatic* inflammation of the spine is seen in adults more often than in children, and usually results from considerable violence. The kyphosis is seldom well marked. Abscess may occur in some cases. The prognosis is much more favourable than in tuberculous disease. It should be remembered that scurvy, rickets, and aneurysm may give rise to symptoms closely resembling the symptoms of spinal caries.

Spina Bifida and Meningocele.—Whitehead[6] and Clutton[7] report cases in which they have successfully removed very large spinal meningoceles. Nicoll[8] advocates excision of the sac in all cases in preference to injection, and makes some observations upon a series of thirty cases which he has subjected to this treatment. He removes the sac completely, and closes its neck; he then draws together the muscles and connective tissue over the opening, and subsequently sutures the skin. When nerve-cords are adherent to the sac, he leaves strips of the lining membrane to which they are attached and replaces them as far as possible in the spinal canal. Nicoll considers that this is a much more satisfactory operation than injection, but he has not yet watched his cases for a sufficiently long time to feel

justified in expressing an opinion as to the effect it will have upon the subsequent course of paraplegia (if present before operation), and upon the subsequent development of hydrocephalus.

Pressure Paraplegia.—It is well known that in the great majority of cases of paraplegia associated with spinal caries, the pressure upon the cord is due solely to the presence of granulation tissue within the spinal canal, and that in most cases recovery takes place without any operative procedure. In old-standing cases and when prolonged rest causes no improvement, *laminectomy* sometimes gives brilliant results. An interesting case illustrating this point was shown by J. Hutchinson, jun.,[9] before the Clinical Society of London, in February, 1898. The patient had had symptoms of paraplegia for eighteen months. Nine months after operation improvement commenced, and ultimately muscular power was completely restored.

Sacro-Coccygeal Tumour.—Clutton[10] records a case in which he removed a large sacro-coccygeal tumour from a child aged three years. The tumour hung down from the buttocks and reached halfway to the knees. It probably originated in the post-anal gut. It was cystic in nature, with a mesh-work of fibrils closely resembling glioma in appearance.

REFERENCES.—[1] "Ann. Surg.," Aug., 1899; [2] "Lancet," Aug. 19, 1899; [3] "Amer. Journ. of Med. Sci.," June, 1898; [4] "Ann. Surg.," Aug., 1898; [5] "Med. Rec.," March 5, 1898; [6] "Brit. Med. Journ.," March 12, 1898; [7] "Ann. Surg.," March, 1898; [8] "Brit. Med. Journ.," Oct. 15, 1898; [9] "Ibid., March 5, 1898; [10] "Ann. Surg.," March, 1898.

SPINA BIFIDA. (See under "Spine and Spinal Cord.")

SPRUE. *James Cantlie, F.R.C.S.*

Dr. Thin's address[1] at the British Medical Association Meeting, at Portsmouth, gave an epitome of the relations of sprue to other forms of tropical diarrhœa, and of the treatment of sprue. Dr. Thin pointed out that in this disease the intestines become thin and atrophied, and that there is a special connective tissue development—a true sclerosis of the submucosa. Dr. Thin[2] relates the successful treatment of a case of sprue by strawberries. Dr. Henderson,[3] Shanghai, is of opinion that the gastric and intestinal troubles in sprue precede the diarrhœa. Capt. Buchanan, I.M.S.,[4] puts forth the following statements in regard to sprue amongst natives of India: (1,) That primary or protopathic sprue is common among natives of India; (2,) That secondary sprue following in, (*a*,) dysentery; (*b*,) acute entero-colitis or enteritis is common; (3,) That incomplete or arrested sprue is very common; (4,) That "famine diarrhœa" is

probably identical with sprue; (5,) That in chronic relapsing dysentery and ordinary dysentery a condition strongly resembling sprue is met with.

Mr. Cantlie [5] ascribes sprue to the acrid and impure vegetable oils used by natives of India and China in preparing curries and in cooking food generally. Mr. Cantlie has given up milk as a treatment in sprue and allied intestinal ailments, and employs an **All-meat Diet.** Capt. Lamb,[6] I.M.S., suggests that the digestibility of milk, as far as the prevention of the formation of milk curd is concerned, is aided by removing the lime from milk by adding citrate of soda in the proportion of 1 in 400. Dr. Manson [7] states the principles of treatment to be: physiological rest, rest in bed, warmth and simple diet; milk is best to begin with, but it must not be too slavishly adhered to.

Dr. Filippo Rho,[8] of Rome, believes that the lesions of sprue resemble those met with in Reichman's disease, which is characterised by dilatation of the stomach, sclerosis of its walls, and great increase of secretion of a very fluid mucus (gastro-succorrhœa). Dr. Bigg,[9] of Hankow, advocates 5-grain doses of **Yellow (Exposed) Santonin** in salad oil, given night and morning and continued for a week. During the time rest and a milk diet are essential.

REFERENCES.—[1] "Brit. Med. Journ.," Sept. 9, 1899; [2] "Journ. Trop. Med.," Sept., 1899; [3] Ibid.: [4] Ibid.; [5] "Pract.," Dec., 1898; [6] "Brit. Med. Journ.,' Sept. 9, 1899; [7] Ibid.; [8] Ibid.; [9] "Lancet," Jan. 15, 1898.

STENOSIS (Nasal). (See "Nose.")

STERILITY (Gonorrhœal). *C. F. Marshall, M.D., B.Sc. F.R.C.S.*

Vedeler, from the investigation of three hundred and ten cases of sterile women, concludes that gonorrhœa is the most frequent cause of sterility. The average duration of marriage in these cases was three years, but seventy-two had been married over ten years. As regards the husbands, Vedeler only examined fifty, but found that thirty-eight of these had had gonorrhœa and thirty-four had infected their wives. He infers from this that two hundred and thirty-five of the three hundred and ten husbands probably had the disease, and that about two hundred and ten must have infected their wives. In order to check this calculation he investigated one hundred and ninety-eight of the women, the examination of whose husbands did not afford sufficient evidence, and found that they had symptoms of gonorrhœa. This number, with the thirty-four cases mentioned above, makes two hundred and thirty-two cases of gonorrhœa out of three hundred and ten cases of sterility, or 75 per cent.

RFFERENCE.—"Centralb. f. Gynäk.," No. 26, 1897.

STOMACH (Atony, Dilatation, and Displacements of).

Boardman Reed, M.D., Philadelphia.

Relative Importance of the Motor Function.—There has been evident, in recent medical literature, a tendency to devote a larger amount of consideration than hitherto to motor insufficiency and atonic dilatation of the stomach, as well as to gastroptosis, nephroptosis, etc. The profession generally had long been inclined to overlook, or at least to underestimate, the prevalence and importance of this class of affections.

Those who apply exact methods to the study of the digestive tract, are well aware that the motor function of the stomach is of much more consequence than the secretory. Even before Schlatter's first complete removal of it demonstrated that the stomach is not indispensable, it had often been noted that certain patients continued to live and be well nourished with virtually no gastric juice or gastric digestion, but only on condition that the motor power of the organ which had become useless except as a reservoir, was sufficiently retained to admit of its emptying itself within the proper time. In other words, Nature is able to dispense entirely with the services usually performed by the stomach, provided always the latter does not hold back the food by reason of atonic muscular walls, and thus allow it to stagnate and ferment instead of passing on into the bowel, where, with the help of the pancreatic and intestinal juices and the bile, it can be perfectly digested.

Absent or deficient gastric secretion, then, though generally very injurious to health, is nothing like so serious a fault as muscular or motor insufficiency, especially when the latter is complicated with a mechanical obstruction at the pyloric outlet, or when the disease, though mild and curable, is not recognised and properly treated.

Ewald,[1] in discussing this subject, referring both to the stomachs in which there is no longer any demonstrable traces of secretion, and to those with slighter disturbances of gastric digestion, puts the matter in this striking way :—

"Everything depends on the fact, then, that gastric peristalsis is present in sufficient amount. If this is the case, then the severest organic affections of the stomach may run their course for a long time absolutely without symptoms. A cancer, for instance, of the greater curvature may reach considerable size, and the process be entirely latent."

The family physician will probably always continue to treat the majority of gastric derangements—the minor ones at least; and in order that he may recognise motor insufficiency, atonic dilatation, and

the displacements of the stomach before they have advanced too far, it is necessary that the simpler methods, at least, of diagnosticating these conditions should be more widely taught. It may be well, therefore, briefly to advert to some of these before proceeding to summarise the noteworthy papers that have been published recently on the various phases of our subject.

Simple Tests of Gastric Motility.—If the patient be made to uncover the abdomen and assume the supine position with the legs slightly flexed, a few taps with the finger tips over the stomach will generally reveal a marked muscular atony, when present, by the splashing sound which is produced. Sometimes, in consequence of extreme tension of the abdominal muscles, this splashing sound cannot be obtained even when the stomach contains much fluid and its walls are quite weak. In such a case, if, while the examiner presses his fingers against the lower part of the stomach, the patient be induced to contract voluntarily and repeatedly his diaphragm and abdominal muscles, as is done by the oriental muscle dancers, the splash can generally be produced, or at least any fluid present can be felt, when there is much motor insufficiency.

In the perfectly normal stomach with properly strong and resilient muscles and not prolapsed, the splash cannot be evoked by any method, even directly after drinking. The louder the splash, the larger the area over which it can be developed, and the longer after a meal, or after drinking a definite quantity of fluid, it can be recognised, the greater the motor insufficiency. When it can be heard over a much larger area than the stomach normally covers, the atony has become a dilatation; when heard lower than normal there may be only a downward displacement.

The writer of this[2] has lately described a more accurate practical method by which any physician reasonably well skilled in percussion can first determine the boundaries of the stomach by percussion over it when empty, and again after drinking one or two glasses of water with the patient in different positions, especially recumbent and standing; and, then, having ascertained the size and position of the viscus, he may easily determine its relative muscular power or motility by the time required to empty itself after test meals. Examinations of the abdomen by both the splash and percussion in the two different positions, and by the method above mentioned, will readily show when the stomach has become empty by the disappearance of a splash previously obtained, and of the zone of dulness heard over the lowest part of the stomach on percussion with the patient standing. In determining the boundaries, the results are

more positive if the stomach be first inflated either by pumping air in through a tube, or by having the patient take a small teaspoonful of sodium bicarbonate dissolved in a glass of water, followed by 30 drops of dilute HCl. in half a glass of water.

In the case of patients accustomed to the tube, it is easier, for the physician at least, to introduce that instrument at different periods after meals, and thus learn how long it takes the stomach to propel its contents into the duodenum. This is Leube's method of testing the motor function.

Ewald's salol test was formerly much used to determine the motility of stomachs, but has been less depended upon of late because with it there are possible sources of error, yet it will usually yield approximately correct results. It is carried out as follows :—

Ewald's Salol Test.—1 gramme of salol is taken in two capsules of gelatin half an hour after a small meal, the patient having first urinated. The latter then passes water every half hour for two hours. Under normal conditions salicyluric acid will appear in the urine by the end of forty to sixty minutes after taking the capsules. By testing with ferric chloride solution, the urine develops a violet colour when it contains salicyluric acid. Ewald[3] adds this practical suggestion : "A simple method is to place a drop of urine on a piece of filter paper and then let a drop of a 10 per cent. ferric-chloride solution fall on the moistened spot on the filter paper. The edge of the drop will assume a violet colour in the presence of even the smallest trace of salicyluric acid. These papers may be dried and preserved and in this way one may easily compare the secretion in the same patient at various times."

Much delay in showing this reaction—that is, much prolongation beyond an hour—signifies usually motor insufficiency.

A New Chemical Test of Motility.—A recently published chemical method of determining the motility of the stomach devised by Winkler and Stein,[4] is very simple. They employ for this purpose iodopin, a new chemical combination of iodine and oil, which is not acted upon at all by the gastric juice, but the pancreatic juice and bile break it up into its component parts, thus liberating iodine. This is very quickly absorbed and excreted. It is demonstrable in the saliva under normal conditions in fifteen minutes and not later than forty-five minutes after the ingestion of the iodopin. But in a case of cancer of the stomach with dilatation, the reaction did not occur till at the end of four hours. Paper permeated with starch and a 5 per cent. ammonium persulphate solution is used as an indicator, and the saliva is tested every fifteen minutes. The authors report

having employed this method in forty-six cases with satisfactory results. The promptness of the reaction depends, not only upon the motor power of the stomach and perviousness of the pylorus, but also upon the activity of the bile and pancreatic juice. Therefore, it is not an absolute test of the activity of the gastric motor function alone.

A New Sign of Motor Insufficiency.—Michaelis[5] is said to have satisfied himself than an enlargement of the stomach to more than 9 or 10 cm. to the right of the median line, shows nearly always a weakened motor function. He says, there are cases of motor insufficiency with very slight enlargement of the stomach, downward but extending far to the right, and cases with good motor power in spite of enlargement downward. Michaelis thinks the lateral enlargement results from a dilatation of the antrum of the pylorus. When it is found, the physician should positively determine the motility by functional tests.

At the annual meeting of the British Medical Association, in 1898, George Herschell[6] introduced the very important discussion on the treatment of diseases of the stomach, from which a portion of Ewald's remarks has already been cited. In the course of this discussion, much prominence was given to the special feature of motor insufficiency. Herschell himself devoted a large share of his remarks to the treatment of this derangement. He took emphatic ground in favour of **Electricity**, giving it the first place as a remedial measure in such cases, and declaring that "The clinical evidence in favour of the beneficial effects of electricity in atonic conditions of the gastro-intestinal tract is overwhelming." He expressed the belief that "Galvanism probably produces its undoubted good effects by acting, not directly upon the muscular substance, but upon the nerve supply of the stomach and intestines." Herschell has been in the habit of treating cases of atony of the stomach mainly by the application of the continuous current to the solar plexus and to the ganglia of the sympathetic and vagi in the neck. The application is made by him in the following manner :—

Herschell's Method of applying Electricity.—The patient is placed upon his back upon a couch, and the negative electrode applied to the nape of the neck, the anode being placed upon the epigastric region. Both electrodes are flat, flannel-covered plates, having each an area of 12 square inches, and remaining stationary during the application, which consists of from 3 to 15 ma. passed for from five to ten minutes. The electrode is then removed from the nape of the neck, the rheophore attached to a 3-inch disc electrode, the epigastric plate remaining in position. The current is then reversed, and the disc applied for

one or two minutes in succession to each of the ganglia of the sympathetic in the neck, a current strength of 1 or 2 ma only being employed.

Massage of the Stomach.—In the same notable discussion Herschell recommended highly "Massage and its congeners, gymnastics and other mechanical means," in the treatment of gastric atony.

He cited from Hemmeter the following directions as to when massage of the stomach may advantageously be used :—

(1,) On an empty stomach before breakfast to strengthen the muscular power of the stomach.

(2,) Three or four hours after a meal to assist in the expulsion of chyme, or to mechanically mix its contents.

According to the same author, it may be usefully employed :—

(1,) In disturbance of the motor function depending on atony of the walls.

(2,) In stenosis of moderate degree.

(3,) In chronic gastritis with reduced secretion.

(4,) In gastroptosis.

(5,) And in certain cases of nervous inhibition of the peristaltic movements.

In the treatment of atony, Herschell has seen much benefit from douching the stomach alternately with hot and cold water, and though this can be done with the ordinary stomach tube, he prefers Turck's double current tube for the purpose. He usually gives a *séance* of ten minutes' duration, changing the temperature of the water every sixty seconds.

Turck's Pneumatic Gymnastics.—In the same discussion, Fenton B. Turck[7] advocated a new method of strengthening atonic stomachs by the employment of an instrument devised by him with a view to stimulating directly the gastric musculature. He denominates the method pneumatic gymnastics, and employs for the purpose an apparatus consisting of two parallel attached rubber tubes of unequal calibre, practically the same as those used by him in atomising the stomach. The smaller and shorter tube, when introduced, reaches just through the cardiac orifice, while the larger and longer reaches the greater curvature. The air tank or bulb is attached to one tube, and to the other a manometer for regulating the pressure (*Fig.* 33). In connection with his method of pneumatic gymnastics, Turck also uses dry and moist heat (vapor) to stimulate the stomach. The forced air passes through a heated coil controlled by a thermometer, and connected with a double tube within the stomach.

In certain cases he finds it better to employ a modification of

the apparatus consisting of a light, inflatable, rubber bag opening into both tubes, which will confine the air that might otherwise escape around the tube or pass into the intestines, when either orifice of the stomach is unduly relaxed. This is introduced into the stomach while collapsed, and afterwards inflated as required. By alternately distending the stomach with air in either of these ways, and then letting it contract of itself, Turck claims to increase the blood supply and tonicity of the gastric muscles, thus overcoming the motor insufficiency; and at the same time he believes that the glandular function of the organ must also be incidentally stimulated.

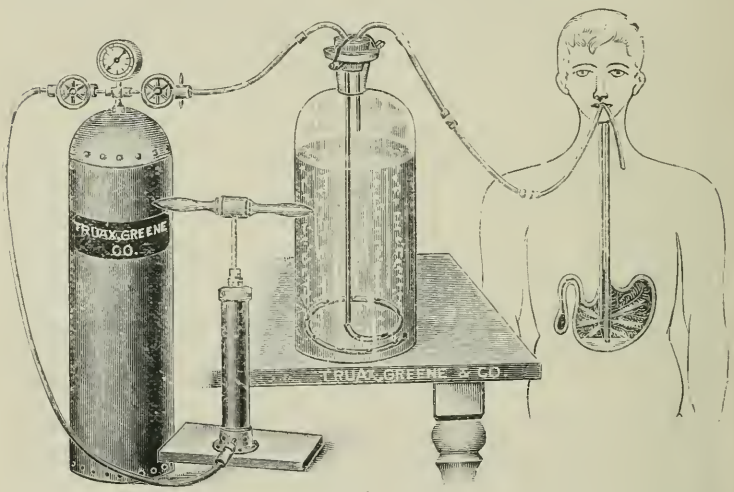


Fig. 33.

Diet and Conjoined Mechanical Methods.—Numerous cases of motor insufficiency which had progressed to the stage of atonic dilatation of the stomach, have been reported by Boardman Reed[8] as having been treated successfully by **Diet, Massage** and **Intragastric Electricity.** These include four classes of cases, as follows:—

(1,) Cases treated by diet and exercise (special gymnastics for the trunk muscles), with in some instances tonic medication.

(2,) Those treated by the same methods, plus abdominal massage.

(3,) Those treated by diet, exercise and intragastric faradism.

(4,) Those treated by the foregoing third combination of remedial measures in addition to general massage, with sometimes very light effleurage of the abdomen, avoiding all kneading over the stomach.

Lavage was added to the treatment in most of the cases in which there was much stagnation or chronic gastric catarrh.

The diet was shaped to suit the various indications present, especially the state of the gastric secretion. Particular care was exercised to have the patients with atonic stomach walls avoid eating too large meals, and to take never more than half a pint of fluid with each meal, including soup, but they were allowed, except in the worst gastrectasis, to drink water often between meals though never more than one glassful at a time.

Naturally only the mildest cases were comprised under Class I. Most of the pronounced cases required, in addition to diet and special abdominal gymnastics, either massage or electricity, and the latter proved very much more curative when applied directly to the inner walls of the stomach.

The writer was careful not to have full massage of the abdomen given, with deep kneading over the stomach, in any case in which there was hyperchlorhydria or acid gastric catarrh, and refers to a previous paper[9] in which he discussed at length the harmfulness of abdominal massage in such conditions. He has found intragastric electricity especially effective in the cases complicated with hyperchlorydria, the very ones in which abdominal massage disagrees. In such cases he has had the best results with faradic currents of high tension.

A New Intragastric Electrode.— Reed had much difficulty in carrying out this method, until he discarded the intragastric electrodes in use before and devised one of his own, which is a modification of that invented by Einhorn. He refers to this subject again in a later article,[10] and gives an illustration of the instrument, which is here reproduced (*Fig.* 34). It was fully described in an article published previously.[11]

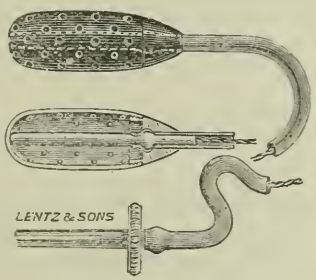


Fig. 34.

With this improved electrode Reed finds it much more practicable to apply even a very strong faradic current directly to the interior of the stomachs of patients with irritable throats, than it is to give them lavage. With rare exceptions, even the most sensitive patients experience no inconvenience from the treatment. They drink first a full goblet of water, and then, after the electrode has been introduced, lie down on a couch and remain recumbent during the application,

which lasts usually five minutes, and is repeated on alternate days. After a month of such treatment, it is always best to suspend it for a week or two ; and it is necessary to test the stomach contents occasionally, since with strong, high tension currents, the secretion of the gastric juice, if normal or excessive, is nearly always reduced and sometimes rapidly. Ordinary faradic currents of low tension, produced by coils having short, coarse wires, and not too rapid vibrators, usually increase the secretion of HCl.

Relative Frequency of Dilatations and Displacements.—The same writer in another recent communication,[12] reports that of seven hundred and ten persons who came complaining of indigestion in some form and were carefully examined by him within a period of three years, there were three hundred and sixty-two in whom the greater curvature of the stomach was found at or below the level of the umbilicus, as a result of either displacement or dilatation, excepting the few cases of megalogastria. In many other cases there were present departures from the normal to a less extent. Of the three hundred and sixty-two mentioned, one hundred and twenty-two were in men and two hundred and forty in women. Eighty of these cases were displacements, twenty of them in men and sixty, three times as many, in women. The great preponderance in women of atony of the abdominal muscles and their contained viscera, is ascribed mainly to their constricting corsets and waist bands and dragging skirts. The writer laments the very general neglect to diagnosticate these cases in their earlier stages (often indeed at any stage), and the prevailing tendency, when they are finally recognised, either to abandon them to their fate as incurable, or invoke at once surgical intervention, through an apparent ignorance of the fact that at the present time most of these results of muscular atony are amenable to dietetic and mechanical treatment. The particular measures most relied upon were, as before, **Diet, Massage, Abdominal Gymnastics, Faradism,** intragastric when practicable, otherwise over the stomach externally. He reports a number of cases of marked gastrectasis and gastroptosis cured within a few months by these means.

Ewald and A. Symons Eccles on Atony of the Stomach.—In the previously cited symposium of the British Medical Association on the treatment of the diseases of the stomach,[13] both Ewald and A. Symons Eccles referred to the fact that atony of the stomach may stand in close relation with either dilatation or gastroptosis. Relaxation is the underlying condition in both. Eccles considers that this condition is greatly on the increase. In over five hundred cases with marked dyspeptic symptoms seen in his practice in the last ten years,

there had been one hundred and twenty-eight cases of dilatation of the stomach. In more than one hundred cases of atonic dilatation and forty of gastroptosis, he had had markedly beneficial results by carrying out for periods of three to ten weeks a treatment which included rest in bed with feeding at first on pulped proteids and milk, the abdominal walls being manipulated three or four times in the twenty-four hours, and the contents of the stomach, if possible, mechanically expelled into the duodenum three-quarters of an hour after the principal meals of the day. His patients were also made to assume a tilted-up position, with the buttocks on a higher level than the shoulders, as often as they could without undue fatigue.

Causes and Treatment of Atonic Dilatation.—Lichty,[14] who has had much clinical experience, gained especially in a sanatorium practice, enumerates the following as causes of atonic dilatation: Too bulky meals; rapid eating: certain diseases of the stomach including chronic gastritis; abdominal tumours and pregnancy; chronic constipation; and constriction of the waist by too tight, and suspension from the waist of too heavy, clothing. As indirect, nutritional causes, he considers worry, anxiety and over-work, either mental or physical; neurasthenia: certain central nervous diseases, including tabes and multiple sclerosis: and febrile diseases, especially typhoid fever. By way of treatment he advises a radical reform of the faulty dress (in the cases of women especially); a partial rest cure for a time, with two glasses of milk and two raw eggs three times a day, and in addition three lunches consisting each of two glasses of milk; abdominal massage, certain exercises intended to develop the abdominal muscles: faradic electricity applied to the abdomen externally; and alternate hot and cold packs, or hot and cold douches applied to the abdomen.

Rectal Feeding in Dilatation.– Benedict[15] recommends in dilatation of the stomach putting the patient to bed for two weeks and feeding by the rectum. He administers then mild astringents and antiseptics. When such rest of the organ is impracticable, he advises two meals daily by the mouth, with exceptionally a very light luncheon between. He gives no milk as a rule except in combination, but allows eggs, including baked custard, meat jelly, German pancake, Ham, crisp salt pork, most smoked meats, cod fish, etc., and prescribes digestants. He allows also toast, zweiback, some of the milder cereals, excluding oat meal and wheat foods, but forbids heavy vegetables, fruits, hot bread, and tea and coffee unless very weak. Tonics are administered cautiously, and the tube is used to remove fermenting masses. Benedict disbelieves in intragastric electricity and apparently does

not employ faradism externally in dilatation. He is not a strong advocate of massage in either dilatation or displacement of the stomach, and doubts the helpfulness of abdominal supporters in most of these cases. After discontinuing rectal feeding, he gives by the mouth sweetbreads and pure chocolate candy, varying this diet with eggs, meat, etc.

Benedict, in the same paper, discusses somewhat fully the indications for surgical intervention in the diseases under consideration.

Simon,[16] believes that **Sodium Sulphate** increases gastric motility as well as secretion, and in this way helps to cure catarrh of the stomach, especially cases with deficient secretion. He gives 10 to 15 grains of it in 6 ounces of hot water every morning for two or three weeks, and finds the sensations of discomfort and pain in the epigastrium with nausea to be relieved by its use. Old cases of years' standing are claimed to have been cured in this way, through a simultaneous improvement of both the motility and secretion. It failed in cancer and in marked gastrectasis as well as in merely neurosal affections of the stomach. That it does favourably affect motility, however, is proved by giving with the Ewald test breakfast, 7 to 15 grains of sodium sulphate, when at the end of an hour the stomach will be found empty instead of still partly full as usual.

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STOMACH (Functional Disorders of, and Dyspepsia).

Boardman Reed, M.D., Philadelphia.

The first part of the above title will be here interpreted as meaning those affections of the stomach which are either wholly reflexes, or a result of pathological conditions not yet recognised. The number of such derangements is steadily lessening as our knowledge of pathology becomes enlarged and more exact.

The word dyspepsia, from a strictly scientific point of view, is perfectly understood not to represent any precise morbid entity, but to signify merely difficult digestion, a symptom that may be due to any one of many different organic or functional affections including certain diseases of the stomach, liver, pancreas, intestines, heart, kidneys or nervous system; yet it is still much used, if somewhat vaguely, to

describe a condition that is not always to be diagnosticated with precision except by the use of instrumental methods which are very unwelcome to a considerable proportion of patients. We find numerous physicians still writing papers on dyspepsia, and recording their experience with it as though it were a well-defined disease with a known pathological basis. Hence, to profit by the occasional valuable clinical observations thus crystallised into medical literature, we must continue to accept the term. No real harm is done thereby if at the same time medical teachers are careful to insist upon a more accurate diagnosis whenever it is practicable. And if our whole duty were always performed, it would usually be quite practicable. An enlargement or contraction of the liver, and dilatation or displacement of the stomach, or even motor insufficiency of the latter, can generally be determined now without passing any instrument into the stomach. The condition of the heart and kidneys need never be long in doubt, and the presence of a nephroptosis should always be ascertainable. Gastric ulcer can in most cases be pretty certainly diagnosticated by the symptoms and the results of deep palpation, both in front and behind, and though cancer may indeed elude us in its early stage, it is generally soon revealed by the development of a palpable tumour in the region of the stomach which, with the symptoms and cachexia, do not often leave any room for doubt. Constipation can be readily recognised, and always relieved if not cured. When all these conditions can be excluded, discomfort or difficulty attending digestion may generally be referred to gastric or intestinal catarrh, microbic infection, or to a nervous disturbance of secretion. In such a case, the physician should insist even more strenuously than in suspected cancer, upon having the gastric contents analysed, so that a correct diagnosis may be reached and the proper treatment, otherwise impossible, immediately instituted. Such an analysis is more important here than in cancer because more decisive.

In its narrowest sense, then, dyspepsia signifies some derangement of gastric digestion not yet accurately diagnosticated; in its broader and vaguer sense, the term may be applied to any difficulty attendant upon digestion, either oral, gastric, hepatic, pancreatic or intestinal, and whether of organic or functional origin.

Allchin[1] has classified the disorders of digestion from a causal point of view as follows:—

(1,) Errors of diet; (2,) Diseases of the digestive organs, structural, nervous, or in connection with the blood or lymph; (3,) Improper bacterial action in the gastro-intestinal contents; (4,) Defective absorption of the digesta; and (5,) Abnormal intestinal excretory

processes. An important point in the diagnosis as bearing on treatment, is to distinguish between dyspepsia due to errors of diet and that due to morbid states of the digestive organs.

Neurotic Vomiting.—Richer[2] has found that neurotic vomiting due to simple hyperæsthesia of the gastric mucous membrane, such as occurs in hysteria and gastric neurasthenia, readily yields to a kind of **Internal Massage of the Stomach.** He uses for this purpose a bougie with a rounded end, which is passed down to the floor of the stomach, and here moved to and fro for three or four minutes. This procedure, repeated daily, blunts the sensibility of the mucous membrane. The reaction is less and less, and the vomiting diminishes till finally it ceases entirely.

Extraordinary Claims made for Sodium Chlorate in Gastric Affections.—Maurice Soupault[3] prescribes **Sodium Chlorate** in the treatment of hyperchlorhydria and other dyspeptic conditions, in daily amounts not exceeding 2 drachms in two or three doses dissolved in warm water, and administered as far as possible from meals. He makes for it the extraordinary claim that though particularly beneficial in hypersthenic conditions with excessive secretion of HCl., including gastrosuccorrhœa and gastric ulcer, it also relieves the pain and vomiting of cancer, increasing the appetite at the same time and relieving the hæmorrhage. In the gastralgias dependent upon hypersecretion, the results are claimed to be brilliant. Chemical examinations show that the acidity is not much lessened, and that the proportion of chlorine is not materially changed, though the gastric secretion as a whole is lessened in quantity, and even gastrosuccorrhœa ceases. The explanation of its action which Soupault offers, is that it probably produces a diminution of the inflammatory changes in the mucous membrane such as congestion and catarrh, possibly healing also erosions and superficial ulceration. The result is disappearance of hyperæsthesia and exaggerated sensibility of the stomach. It does little or no good in the asthenic dyspepsias of nervous origin. It is important to bear in mind that large doses of sodium chlorate are toxic, and liable to produce albuminuria, methæmoglobinuria, or even bulbar symptoms. It is claimed that to persons with sound kidneys 2 drachms daily can be administered for months without danger, but a more cautious use of the remedy would seem to be desirable.

Gastralgia.—Clark[4] has found 1-drop doses of **Fowler's Solution** before meals highly curative in gastralgic pain of purely nervous origin. They often relieve such pains with great rapidity. This remedy would probably fail in the cases of gastralgia in which there is irritation from an excessive secretion of HCl., as well as in those in

which there is an excess of fermentation with perverted secretion, in consequence of too small a percentage of HCl.

The Influence of Formaldehyde upon Digestion.—Finossier[5] investigated this question by experiments in flasks containing, besides the samples of food, saliva or other digestive fluids with and without a dilute solution of formol. His results showed that there was only a slight retarding effect upon the digestion of starch by either the saliva or pancreatic juice; a more decided restraining influence upon the digestion of proteids, and most of all in the coagulation of casein, which took twenty-five minutes as against two minutes without the formol.

The Choice of Alkalies in Acid Dyspepsia.—Dubard[6] of Dijon advises **Carbonate of Magnesium** for acid eructations and pyrosis due to organic acids, but not carbonate of sodium, which he finds to aggravate such symptoms, the salts of soda and potash with organic acids being quite as irritating as those acids themselves. In true hyperchlorhydria with pyloric spasm, Dubard says sodium bicarbonate is beneficial, while the calcium or magnesium salts aggravate. This teaching, however, needs to be taken *cum grano salis*. The truth is that all the alkalies do harm in hypochlorhydria, especially if used for any length of time; and that magnesium carbonate often relieves hyperchlorhydria as well as the sodium salt. In the worst cases they may both fail to lessen the secretion.

A New Test for Lactic Acid.—Arlond[7] suggests the following as a test for lactic acid in the stomach contents:—

(1,) 0·2 c.c. saturated alcoholic solution of gentian-violet in 500 c.c. of distilled water.

(2.) Tinctura ferri perchloridi (*U. S. Pharm.*, 1890), 5 c.c.; distilled water, 20 c.c.

A drop of solution 2, added to 1 c.c. of solution 1 in a porcelain basin, gives a blue colour, which changes to a green or yellow-green on the addition of a few drops of filtered stomach contents, should lactic acid be present.

A large amount of clinical evidence has accumulated pointing to the usefulness of **Orexin Tannate** in depressed conditions of the gastric function, both secretory and motor. Kobl,[8] Bodenstein,[9] and Boardman Reed,[10] among many others, report favourably of it as a stomachic. In adults its most marked effects are said to be in the anorexia of phthisis. It is considered by Bodenstein more valuable even in the functional than in the organic diseases of the stomach. In uremic vomiting and in hyperemesis gravidarum, it has been successful in a few reported cases. It is contraindicated in hyperchlorhydria.

Ice-water Gargle for Hiccough.—Stewart,[11] of Atlantic City, confirms a previously reported clinical experience with **Ice Water Gargling** as a remedy for obstinate hiccough. He has resorted to it a number of times with entire success. In the worst cases he makes the patient simply gargle the throat with ice water, with resulting immediate relief. In one of tabes, presenting a variety of stomach symptoms of which hiccough was the worst, the ice water gargle proved as successful as in other instances.

The Place of Hydrochloric Acid in Dyspepsia.—In considering this subject, Boardman Reed[12] cautions against the routine administration of HCl. without having first determined the degree of activity of the gastric glands. To give the drug as a medicine when HCl. is already secreted normally or in excess, is to injure the stomach, since it is capable, when long continued, of causing hyperchlorhydria, or of greatly aggravating this condition when it already exists. On the other hand, it is usually a valuable remedy when the secretion is deficient, not only as a digestant palliating the trouble, but also as a restorative, assisting in curing it. Reed has commonly combined pepsin with it, finding the combination more efficient than HCl. alone, and experiments have shown that when HCl. is deficient pepsin generally is also.

The following has been found a convenient mode of administering the combined remedies:—

℞ Ac. Hydrochlor. dil. fl. ℥vj | Glycerol. Pepsinæ q.s. ad fl. ℥ij

M. Sig.—15 to 30 drops, or in some cases a teaspoonful, in half a glass of water to be taken by sips frequently during an hour following each meal.

This plan of gradually introducing the acid into the stomach imitates nature's method of supplying it, and in the cases complicated with gastric hyperæsthesia, agrees much better than when it is taken in a single draught.

A French Method of giving Hydrochloric Acid.—Perrand[13] quotes Tournier of Lyons as giving 3 to 4 grammes of the French official HCl. twice a day in the following manner: 15 drops after each of the two principal meals; half an hour later, 15 drops more; and in certain cases, 15 drops more at the end of another half hour.

Ewald is said to prescribe the acid in 15-drop doses three or four times at fifteen minute intervals after meals, but the German HCl. is 25 per cent. strength only, while the French is 35 per cent. Perrand advocates such a bold use of the remedy in hypochlorhydria, especially when there is a marked deficiency of HCl. associated with lienteric diarrhœa, or with a species of alimentary vomiting not accompanied by soreness nor by burning sensations. He considers

the same method very useful also in cases of gastric catarrh with hypo-acidity of alcoholic origin, when there is vomiting, weight after meals, distension, loss of appetite, and insomnia. Such a line of treatment would be contraindicated in cases of gastric hyperæsthesia.

A Convenient Method of testing the Gastric Juice.—Linnoissier,[14] in examining the gastric juice, rejects Hayem's method, and uses the following combination of reagents to determine the quantity of free HCl. and the total acidity: dimethylamidoazobenzol 0·25, phenolphthalein 2·0, alcohol 100 c.c. Of this he adds 2 drops to the fluid to be tested, and titrates with $\frac{1}{10}$ normal soda solution. If there is free HCl. present, a rose-colour is produced. The amount of $\frac{1}{10}$ normal soda solution necessary to cause the disappearance of the rose-colour, indicates the proportion of free HCl. present. The amount of the soda solution needed to cause the reappearance of the rose-colour indicates the total acidity.

To stop Fermentation in Motor Insufficiency.—V. Kozicykowsky[15] adopts the following method: The mouth is first subjected to a thorough cleansing at the hands of a dentist; the patient is then fed per rectum for a period of ten days, during which the stomach is washed out daily with a solution of **Chinosol,** after which he is gradually allowed to return to a semi-solid diet. With this treatment he claims that H_2S fermentation is permanently cured.

Effect of Vapor Baths on Gastric Secretion.—A series of observations as to the effect of vapor baths on gastric secretion, by Simon,[16] shows that the secretory activity of the stomach suffers a marked diminution lasting two days. The author ascribes the phenomenon to the loss of Cl. Na, consequent upon the excessive activity of the sweat glands.

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STOMACH (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

I.—Examination of the Stomach and its Contents.

It is about a century since Spallanzani and Réaumur made experiments upon the gastric juice by withdrawing some fluid with a sponge tied to a length of string. The curdling influence upon milk exerted

by the calf's stomach was well known. Prout, in 1824, discovered the hydrochloric acid in the gastric juice, and Schwann, in 1836, the pepsin ferment.

It was the custom, it is said, to empty the stomach solely by emetics until Casimir Renaut, in 1802, washed out the stomach in a case of poisoning. The method did not come generally into use until Kussmaul invented his stomach pump in 1867, and Faucher the siphon method in 1879, when it was largely employed for relieving the stomach in pyloric stenosis.

Beaumont, it is well known, observed the movements and appearance of the interior of the stomach during digestion in the case of Alexis St. Martin, a Canadian who was suffering from a gastric fistula, the result of a bullet wound.

Inspection.—A dilated stomach may be observed through thin abdominal walls by its shape, when partly distended. A simple distension of the epigastrium may be produced by fluid in the lesser omental cavity or encysted above the colon, due to the perforation of a gastric ulcer. Even in a thin patient a pyloric tumour can rarely be seen until it has passed the operable stage.

Percussion.—The outline of the stomach can be percussed out at intervals varying with the time at which meals are taken. When the stomach contains fluid some hours after a meal, a tap on the epigastrium produces a lapping sound (*le bruit en clapotage*).

Palpation.—The pylorus itself, or one only very slightly enlarged, may be perceived in a thin person, but a malignant tumour of considerable extent may be obscured by tense and fat abdominal walls.

Auscultation.—This is chiefly of service in recognising the gurgling sound made by fluid falling from the œsophagus into the stomach which is delayed in œsophageal obstruction. Also, in an hour-glass stomach, fluid has been heard passing from one pouch to the other.

Vomit or Washings.—The examination of the vomit, considered in relation to the time of the previous meal, although important, does not yet allow of precise conclusions. Generally speaking, malignant disease diminishes the acidity of the gastric juice, which is thicker and more ropy with mucus, and shows lactic acid. But dyspeptic conditions attended by atrophy of the glands of the mucous membrane, with or without dilatation, also cause a diminution of hydrochloric acid with an increase of lactic acid, also of butyric acid. Generally speaking, in simple conditions the hydrochloric acid is normal in amount, or there may be a marked increase.

Delayed Digestion or Gastric Stasis.—Digestion is delayed beyond

several hours in pyloric obstruction, and there is an excessive secretion of fluid which has a sickly odour like fermenting wine-lees.

Micro-organisms.—Most important observations have been made on the long and short bacilli, also on the sarcinæ and other organisms found in the stomach, but as yet no decisive conclusions have been reached.

There are other methods more elaborate and of less certain value and expediency which are generally applicable only in a few cases, as they are apt to be a source of discomfort to the patients.

Washing out, or Lavage of the Stomach.—Some patients are in no way troubled by the passing of an œsophageal tube and the irrigation of the stomach; they become used to it or learn to do it for themselves. But others object strongly, it repels them from undergoing further treatment, and may cause marked shock. Generally speaking, it is better to confine oneself to the examination of the vomit rather than promote discomfort or worse. If the patient is fed for a few days before the operation, largely by the rectum, and during the last twelve hours entirely so, the natural antiseptic action of the hydrochloric acid is able to assert itself. If the patient is not disturbed, the contents of the stomach may be removed after a meal, *e.g.*, twelve hours after an ordinary meal, or six hours after a test meal of soup, meat, bread and a glass of water. If undigested materials are found after this interval it is evident that digestion is distinctly delayed—there is gastric stasis.

Artificial Distension.—As an addition to percussing the outlines of the stomach, the organ has been artificially distended. This has been done by giving a patient 40 to 60 grains of bicarbonate of soda, followed by a similar amount of tartaric acid in a little water, repeating the dose in a minute or two if the distension is insufficient: or the stomach has been inflated with air through an œsophageal tube by means of a ball syringe.

Illumination of the Stomach.—Gastroscopy, or the adaptation to the stomach of the cystoscope, was commenced by Mikulicz in 1881, but has made no way. Millot, in 1867, started, and Einhorn, of New York, in 1889, developed the principle of diaphanoscopy by the insertion of a small electric lamp, not exceeding four-candle power, into the stomach and viewing the epigastrium in an absolutely dark room. By transillumination the umbilicus is illuminated, the ribs and liver are more opaque, and a tumour is supposed to cause a shadow, but so also do fæces in the transverse colon. Some have filled the stomach with water. Einhorn says the stomach should not be distended. The observations have as yet not been reliable.

Observations with the X-rays are especially valuable in indicating the presence of foreign bodies, safety-pins, coins, Murphy's buttons (after gastroenterostomy), etc. Boas and Levy Dorn have given the patient capsules of subnitrate of bismuth to swallow, and have watched the course by the fluorescent screen, a coin being placed on the skin of the abdomen. But this cannot with certainty indicate the position and size of the stomach, as it is as yet notoriously impossible to localise exactly with the X-rays.

Sounding.—The spiral stomach sound invented by Turck, called the gyromele, with a sponge or inflated bag at the end, need not further be mentioned.

II.—Wounds of the Stomach.

Wounds of the stomach are characteristically caused by stabs aimed at the heart which, missing their aim, penetrate the wall of the stomach. If the stomach is full the point of the weapon may not pass through the posterior wall, and so the large vessels are uninjured. As the dagger is withdrawn a rush of the fluid contents pushes out the wound of the stomach, and sometimes the omentum also. If the stomach is empty it may be transfixed and the vessels behind punctured, causing sudden death, or the contents are extravasated into the peritoneal cavity, where they set up general peritonitis, or, possibly, the inflammation may remain limited. Pistol bullets and rifle bullets of low velocity may cause the same sort of wound as a stab. Supposing the patient to escape sudden death from hæmorrhage, he is exposed to general peritonitis, to a local peritonitis producing a subphrenic abscess, or to a gastric fistula with or without prolapse of the omentum. The latter may adhere to the wound, and if all the contents escape externally from the first, no peritonitis need be set up. A stab may wound the stomach across the lower part of the pleura and the diaphragm, and then there may be an escape of the contents into the pleural cavity. Lacerated wounds not immediately fatal, are very rare. Wounds of the stomach in war were considered to be always fatal (Otis, 99 per cent.), or generally so (Percy, 75 per cent.), but Bailey, in 1880, a pupil of Le Forts, went to the opposite extreme and said that seventy-five healed out of eighty-eight. In some cases, after a fistula has persisted for a time it has spontaneously closed, the patient only suffering from the fixation of the stomach. But now the systematic suture of wounds has rendered recovery probable in all uncomplicated cases. The earliest cases operated upon were those in which the stomach was prolapsed. Schenck von Grafenburg describes the wound of the stomach by a hunting spear

which was successfully closed by suturing the abdominal wound and that of the stomach with one and the same suture. Rousset mentions a case of wound of the stomach with prolapse of the omentum which became gangrenous and was cut off; healing followed. A number of such cases are recorded. The frequency with which homicide is perpetrated in Italy by stabs aimed at the heart has given Italian surgeons the opportunity of leading the advance of surgery. Not only have wounds in the epigastrium been at once explored and suture carried out successfully, but also when the pleural cavity has been involved, ribs have been resected, the omentum, if prolapsed, ligatured off and returned, the wound in the stomach sewn up, and the organ returned through the diaphragm; then the diaphragm has been closed, and, finally, the pleural cavity washed out and drained. Mercanton described a successful case in 1876. Tansini, Facilides and Tilling cases in 1885, and since then many others. A patient, therefore, with a wound of the stomach, not immediately fatal from hæmorrhage, may be expected to recover unless neglected and septic peritonitis or pleurisy allowed to become established. The extravasation of partially digested food and fluid having an acid reaction is the pathognomonic sign of a perforation of the stomach. But this is no longer the special indication for an operation. Every punctured wound of this region should be explored by enlarging it so that it may be traced to its full extent.

The wound of the stomach by a small rifle bullet (Mauser), if not fatal from hæmorrhage, appears to heal well under expectant treatment.

When the wound in the stomach is found it should be invaginated and closed by two rows of Lembert's sero-muscular sutures, the second invaginating the first. The question of washing and draining is the same as in the case of a perforating gastric ulcer. Generally the peritoneal cavity is wiped clean near the stomach, and sutured. Occasionally neglected cases have to be drained through the epigastrium, possibly from the pelvis. The pleura should be drained by a strip of gauze or tube if involved.

III.—Foreign Bodies in the Stomach.

Foreign bodies when swallowed are rarely returned by vomiting; generally they pass onwards and are discharged per anum. They may escape by the pylorus yet become arrested in the intestinal canal. Being prevented, from their size or shape, from escaping through the pylorus, they may remain in the stomach, causing merely discomfort, or may ulcerate outwards through the skin or elsewhere. Moreover,

a foreign body, such as a tooth-plate, may lodge in the cardiac end of the œsophagus and be extracted through the stomach.

The diagnosis of the presence of a foreign body in the stomach is now rendered easy by the X-rays. The older methods, that of observing the patient's symptoms, palpation, sounding, and the testing of the gastric contents for iron dissolved by the hydrochloric acid, are all uncertain. The easy means of diagnosis by the X-rays should not tempt the surgeon to do gastrotomy except in those cases in which, from the volume, shape, etc., of the foreign body, its safe passage through the intestines is unlikely. At least, if it is causing no disturbances, objects like coins, closed safety pins, etc., may be left alone for a time. Thus, a brooch was seen in the stomach of a girl, aged eight, by aid of the X-rays, and it was passed per anum seventy-three days later. There is not much evidence to support the value of sticky pultaceous foods, for foreign bodies have been generally passed spontaneously without any special dieting. Dickson administered tow and figs, and the tow with seeds of the figs was found adhering to the foreign body when it escaped. But tow is decidedly objectionable, as it might form a ball in the stomach like hair.

Gastrotomy is indicated whenever the foreign body gives trouble, or when it is unlikely to escape without harm, such as a knife, fork, needles, etc., or when it has remained a long time in the stomach, like a coin or Murphy's button, for fear that ulceration and perforation may ultimately occur.

Gastrotomy for the removal of a foreign body should be begun by a median epigastric incision; the stomach is then drawn forwards and the peritoneal cavity well protected. The incision into the stomach should run longitudinally between the curvature, and it is most essential that it should be so long that its edges need not be bruised in extracting the foreign body. The gastric wound is closed by a double row of sero-muscular sutures, the second row invaginating the first.

IV.—Gastrostomy.

This operation affords permanent relief in the case of inflammatory strictures of the œsophagus which do not yield to dilatation by bougies and tubes. The application of the operation is in this respect a limited one, and there are still further restrictions, owing to the success attending retrograde dilatation of the cardiac orifice and œsophageal strictures through a gastrotomy opening. Unfortunately, the cases to which gastrostomy has mostly to be applied are often unsuitable for any operation owing to the exhaustion which has

already set in, and the steady progress of the œsophageal cancer cuts short the patient's existence independently of the power of taking food.

Gastrostomy has notoriously been on the whole an unsuccessful operation, and the various modifications do not materially improve the general results.

Granting the diagnosis and some difficulty in swallowing, the suitable regulation of the diet is of considerable importance. The patient will swallow better by sucking **Ice,** or **Cocaine** or **Morphine Lozenges** just before meals. **Iodide of Potassium** administered for a few days relieves congestion, but the chief relief is found in **Opium** or **Morphine,** taken first at night only and later by day. A great deal of relief is given by resting the patient's œsophagus by putting him to bed and keeping him entirely on rectal enemata for a day or two with only a little water to sip. Afterwards liquid food is taken, and then well-divided solids. I certainly agree with those who condemn the excessive use of the bougie. If a bougie will pass easily it may often give relief, or Symond's tubes may be inserted, except when the cancer is near the larynx, when they cannot be borne. In short, it is spasm which in many cases causes the difficulty in swallowing, and this being relieved, the patient will live under the above treatment quite as long as after gastrostomy. Ten months is a very long time for a patient to survive after gastrostomy for malignant disease, and a patient of mine has lived that time, although when he first came for treatment he could hardly swallow at all. The patients, according to my experience, have less discomfort without than with gastrostomy. Should such measures fail, and starvation threaten the patient, then gastrostomy is indicated. Gastrostomy is of no use if the malignant disease has already invaded the respiratory tract; life cannot be prolonged by it. The objection raised to such a limited indication is that the immediate mortality is very large, but the operation is merely a palliative one and has this essential objection, that it fixes the stomach.

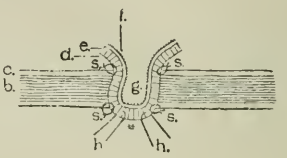
Gastrostomy as an operation was suggested by observations on gastric fistulæ, and, following Beaumont's case, Blondlot, in 1841, made some gastric fistulæ on dogs, which experiments were repeated by others. Sédillot had previously written on the subject in 1846, and he performed the first gastrostomy on a patient in 1849.

The operation became a firmly established one owing to the improvements introduced by Howse in 1879. He made the oblique incision parallel to the costal margin; before that there had been much variation—a vertical median incision or one in the linea semilunaris, and even a horizontal one had been tried—and although

it does not matter much when the stomach is dilated, the oblique incision has the advantage when, as it often is, the stomach is shrunken. Howse did not cut through the muscles, but stretched them, thus giving a much better chance for a sphincter to form and the escape of gastric juice to be prevented. He further insisted upon the selection of a spot in the vertical portion of the cardia. Many

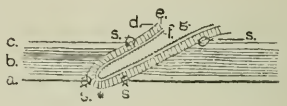
DIAGRAMS OF GASTROSTOMY.

A.—Cone fixed by double row of sutures, Howse's method.



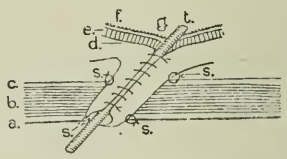
A

B.—Cone drawn obliquely through a second opening in the skin. Method of Hahn, Sabareef, Frank, and Kocher.



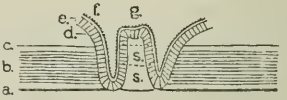
B

C.—Oblique valve made in cone by folding over tube. Method of Witzel.



C

D.—Circular valve made by invaginating cone. Method of Kader and Senn. (*a*,) Running in and out sutures inserted round the opening.



D

(*a*,) Skin; *b*,) Muscle of abdominal wall; (*c*,) Parietal peritoneum; (*d*,) Viscera peritoneum; *e*. Muscle of stomach wall; *f*, Mucous membrane; (*g*,) Cavity of stomach into which opening in cone leads; (*) Apex of cone where the opening is made; (*h*,) Fixing threads; (*s, s*,) Sutures; (*t*,) Tube.

Fig. 35.

operations have failed because the stomach has been opened much nearer the pylorus than the surgeon suspected. He placed two fixing threads in the cone of the stomach, by which it was drawn out and fixed to the skin by a double row of sutures passed through the superficial coats. Finally, he delayed the opening of the stomach until adhesions were formed, as late as the fifth day, when it was

made by a small incision with a narrow knife guided by the fixing threads.

The Valvular Methods.—Witzel, in 1891, introduced an oblique valvular method by making an oblique canal, passing through the abdominal and gastric wall. He made the usual skin incision, split the rectus longitudinally and the transversalis horizontally, made a small hole into the stomach in which he inserted a tube, and over the outer part of the tube sutured a fold of the stomach so as to enclose a canal 4 cm. in length. This was all fixed outside the peritoneum by suturing to the abdominal wall. Witzel supposed that in this way an oblique opening would be made into the stomach, just as the ureters enter the bladder obliquely through the wall. *Post-mortem* examinations do not support this view, for the canal through the stomach wall itself has become straight, the closure of the fistula being due to the muscle of the abdominal wall and the puckered folds into which the cone of the stomach is thrown. Marwedel's modification consists in doing the operation at two sittings. Kocher fixed the stomach to the abdominal wall first of all, then formed the canal, and finally, at one end of this canal, punctured the stomach, pushed in the end of the tube, and closed the canal over it.

But the formation of a circular valve is at present most in favour. It can be quickly done; the patient can be fed through the tube from the first; it can be employed for the most contracted stomach; there is little or no leakage: and when established, a tube is only passed at meal times. The special point is to obtain the invagination of the apex of the cone so that the opening into the stomach shall be at the bottom of a funnel which projects into the cavity of the stomach. Pénières, Fontan and Ricard made experiments, but the operation was introduced by Kader and by Senn in 1896. Bidwell, also in the same year, emphasised the importance of fixation to the peritoneum only, so as to allow the stomach more mobility than when it is extensively adherent to the skin.

The principle of the operation consists in inserting two, or even three, concentric running-in-and-out sutures. A puncture is made in the centre and the tube inserted, then the inner suture is drawn tightly, acting like a string closing a bag, round the tube. Then the tube is pushed inwards and the second suture tightened so that the apex of the cone is invaginated with the tube, and a third bag suture may be added. This invagination may be fixed to the peritoneum or drawn through the fibres of the rectus muscle. The patient is fed through the tube, which is closed by a clip. In a week or ten days the tube becomes loose and can be easily taken out, washed and returned. When

healed the tube is passed only at meals. There is a marked absence of regurgitation.

The mortality following this valvular method is independent of it and must vary with the particular condition of individual patients.

Gastric Fistula.—A gastric fistula is the result of a wound, or follows the perforation and escape of a foreign body. Some tend to close spontaneously, others persist. Attempts to assist closure were at first limited to cauterising the mucous lining of the fistula. Middledorpf, in 1859, introduced a simple plastic operation; but Billroth, in 1877, after several unsuccessful attempts, finally cured his pa ient by completely separating the stomach from its adhesions to the abdominal wall before closing the fistula. Esmarch also resected a portion of the indurated wall of the stomach. This is the operation which should always be done: The complete separation of the stomach from its adhesion to the abdominal wall, the excision of all the scar tissue around the fistula, and the union of healthy tissues. Anything short of this is likely to fail and the fistula to re-form. Even if a partial operation closes the fistula, it leaves the stomach adherent to the abdominal wall, and hence discomfort or pain is caused whenever the stomach is distended or undergoes peristaltic movement.

Exceptionally, when a gastrostomy opening has had to be made for a fibrous stricture, impossible to dilate by passing a bougie either upwards or downwards, after a period of rest the stricture at last yields to dilatation, and then the gastrostomy opening can be closed. Clutton did gastrostomy, using harelip pins, about six weeks after a child, aged four years, had swallowed a piece of caustic soda. For four months no bougie could be passed either downwards or upwards; then a fine whalebone was passed through. Dilatation was very slow and was not completed until a year and a quarter after the gastrostomy. The track of the fistula was subsequently cauterised, and finally closed two years and a half after the gastrostomy. Clutton refers to a previous case of Morgan's, having a similar course, in which the gastric fistula had been permanently closed.

V.—The Results of Simple Gastric Ulceration.

Surgical interference is becoming more and more successful in its attack upon the complications which result from simple ulceration of the stomach; not only so, but some attempts have been made to anticipate the complications by attacking the chronic ulcer itself. Amongst these complications are: Acute perforation into the peritoneal cavity, subacute perforation with the formation of subphrenic abscesses and empyema of the thorax, simple pyloric stenosis and the

resulting dilatation and displacement, recurrent hæmorrhages, painful adhesions.

(*A*,) *Special Signs of Gastric Ulcer.*—The special signs of gastric ulcer which precede these complications are often entirely absent, or no evidence can be obtained of their existence, so that the ulcer is latent until the onset of one of these complications.

(*a*,) *Pain.*—Typically, an ulcer of the stomach should cause pain, epigastric uneasiness, tightness, or a dull, gnawing, burning pain over the pit of the stomach, or at one special spot there is pain on pressure, or the pain may be referred to the back, at the level of the eighth or ninth dorsal vertebra and to the left of the spine. The dorsal pain may appear later than the epigastric pain, or alternate with it. The pain generally comes on a few minutes after taking food, but it may be delayed for an hour or two, and lasts until the end of digestion. When there is an excess of hydrochloric acid the pain may be independent of meals.

(*b*,) *Pulsation or Throbbing.*—Pulsation or throbbing is felt in the epigastrium with or without pain, a reflex vaso-motor disturbance.

(*c*,) *Vomiting.*—This is very variable, usually small in amount unless there is dilatation ; generally it consists of "pyrosis," acid vomit, due to an excess of hydrochloric acid. If the pain is severe, vomiting often accompanies the attack, and if it occurs an hour or two after taking food, it generally relieves.

(*d*,) *The Complications.*—More positively the presence of an ulcer is known by its complications. It has been said to last a long time ; Brinton says thirty to thirty-five years, but it may be asked, how, in the absence of its complications, can the continuance of an ulcer be assured ? A revision of diagnosis is necessary in those cases where a chronic ulcer is said to continue for years without complications.

(*e*,) *General Signs.*—There are general conditions which accompany ulceration : A variable appetite, rendered bad on account of the pain, constipation, anæmia and wasting.

(*f*,) *Gastric Tetany.*—Gastric tetany occurs especially when severe ulceration is going on to scarring and stricture of the pylorus with dilatation. Bouveret and Deric, in 1892, suggested the ptomaine or auto-intoxication theory. Soltau Fenwick supported this in 1893 and insisted on the importance of washing out the stomach. In 1898 Mayo Robson refers to it as an important indication for surgical interference, for, as shown in Trevelyan's review of the subject in 1898, a rapidly fatal termination from exhaustion may ensue. Attacks of gastric tetany are always preceded by vomiting, and the first sign may be tingling in the extremities, then cramps in the limbs and

in the abdomen. Washing out the stomach affords partial relief, but, according to Mayo Robson, it is not only absorption from the stomach, but the pyloric spasm preventing the emptying of the stomach by peristalsis, that causes the cramps. If surgical interference is delayed, and especially when the patient is already exhausted and has albuminuria, there are severe spasms closing the jaw, the trunk muscles are involved, so that respiration is impeded and the patient becomes blue, clonic cerebral convulsions appear, and he dies exhausted.

(*B*,) *Acute Perforating Gastric Ulcer.*—An ulcer of the stomach may perforate, and fluid slowly leaks out, with the result that an abscess forms in the neighbourhood of the stomach. The subject of subphrenic abscess and fæcal empyema was first of all fully dealt with in a paper by Tillmans in 1882, in which he recommended immediate surgical interference.

The first operation for the relief of acute perforation was successfully performed by Mikulicz in 1884, and is now the only recognised form of treatment. The success of the operation is mainly dependent upon the performance of the suture within a few hours of the perforation, subsidiary conditions being the amount of shock and the position of the ulcer. Later cases are saved, as a rule, only when the acute peritonitis is localised by adhesions, although there are a small number which have recovered after general peritonitis has set in. The all-important question is the early diagnosis, the recognition of the signs of perforation before the onset of peritonitis.

The diagnosis of perforation cannot be made from any one sign, but from the general bearing of all the features of the case. A special sign of perforation is a sudden acute pain felt in the left hypochondrium or epigastrium, accompanied by an amount of shock varying from transitory faintness to collapse or insensibility. The pain may be very slight and subside for a time, or be referred to the umbilicus, or to the right hypochondrium, when it may be confused with gallstone colic, pyloric adhesions and duodenal ulcer, or may be severe and felt generally all over the abdomen. Young women between sixteen and thirty, especially when anæmic, are the commonest subjects, but men and older women suffer, although less often. A history pointing to previous gastric ulceration is suggestive, yet the ulcer may have been latent until the moment of perforation, or the patient may be unconscious or so collapsed as to be unable to give an account of herself. At first the epigastrium is soft, after a few hours it becomes rigid and retracted, then distended as peritonitis becomes established. The early lack of rigidity may prove deceptive.

With this there may be diminution or loss of liver dulness. This is a very uncertain sign; it is due to the collection of gas above the transverse colon. Yet old adhesions may prevent the gas from influencing the liver dulness, which therefore persists; also, the liver dulness is a variable quantity which is altered by distension of the colon, whether by constipation or by a band. The relation of the time of perforation to a meal is uncertain; typically it occurs soon after and during digestion. Over-distension may cause rupture, but it also takes place when the stomach is empty. Vomiting is often absent; it may occur once or so at the time of perforation, and be repeated if anything is swallowed, but usually it does not become frequent until peritonitis has set in. Characteristically the patient suffers from shock and is pale, with a pinched abdominal facies, but may be in the early stage quite placid and retain a colour. The breathing is typically short and catchy; the temperature is sub-normal or normal and may not rise until late in the peritonitis. The pulse is usually quickened and steadily rises. Perhaps a steadily rising pulse is, in an obscure case, the most certain indication for surgical interference; exceptionally, when the shock is very severe the pulse rate is sub-normal. Subsequently, the signs of general peritonitis become more and more marked.

The cases about which a mistake is likely to be made are: Firstly, the passive form, in which all signs are very slight; in such a case the steadily rising pulse, the increasing epigastric distension with the loss of liver dulness are the important features, and these ought to prevent a surgeon from postponing exploration; secondly, mistakes may be made in cases where the abdominal pain is general or not localised in the epigastrium, so that the first incision is not made in the right place, and yet the abdominal exploration will lead up to the correct diagnosis. The most likely cases to be explored unnecessarily are the hysterical ones; there is only one rule for recognising them, viz., the finding of inconsistencies between the various signs. Thus, a servant girl was admitted to the hospital for supposed perforation. She was partly unconscious, rolling the head from side to side and moaning, the mouth was open, and the tongue covered with a thick, brown, dry fur. The epigastrium was distended and painful, and there was only a narrow strip of liver dulness remaining. But the rest of the abdomen was soft, the pulse was between 80 and 90, and the temperature normal. The extremities were quite warm and the face was not shrunken. All the history obtained was that the attack had commenced four days before, that she had vomited continuously since, and that menstruation was overdue. In consultation with my

colleague, Dr. Allchin, we agreed that the symptoms did not coincide with a perforation, that she had neither shock from a quite recent perforation, nor the general peritonitis she ought by then to have had if the perforation had occurred four days before. Moreover, the delayed menstruation was suggestive. The patient was ordered large fluid enemata, all feeding by the mouth was stopped, and calomel was given. When seen three hours after, she had not vomited and was no worse. The next day the bowels had been opened, menstruation had begun, the tongue was cleaning, and the patient soon got quite well.

In a doubtful case the patient should be watched hour by hour, and it is most important not to administer opium or morphine until the diagnosis has been made.

Generally speaking, it will be impossible to foresee the condition of affairs before the abdomen is opened. A median incision should therefore be made, entering just below the xiphoid process, for if the perforation is in the anterior wall, the effusion may be shut off from the rest of the abdomen by the line of the transverse colon and omentum. The incision can then be enlarged downwards or outwards to the left according to circumstances. In a simple and early case gas and stomach contents escape from a cavity in front of the stomach, and an ulcer is found to have perforated on the anterior abdominal wall. If this ulcer has not a very indurated zone around it, the best method is to tuck it in and close by a double row of sero-muscular sutures. Excision should be avoided, if possible, because the operation takes longer; it may be difficult to control hæmorrhage; the stomach wall is more widely ulcerated than appears, and the patient is not in a good condition for healing. Hence, after excision, healing may not occur, the sutures give way, and the patient die with a large gaping hole in the stomach. Nevertheless, excision may be very successful in an early case. Near the pylorus or cardiac orifice it may be impossible either to tuck in the edges or to excise, and a gastric fistula in this position would almost certainly be fatal. Hence, it is necessary to follow Bennett, and push a tag of omentum into the hole, afterwards stitching the omentum to the wall of the stomach all round. If the extravasation is confined to the front of the stomach, the whole is washed, wiped out, and sutured without drainage.

The mortality following acute perforation has been gradually diminishing as surgeons undertake the operations at an earlier period. Keen and Tinker, in 1898, report twenty-six cases operated upon within twelve hours, giving a mortality of 19·23 per cent.; whereas sixteen cases operated upon between twelve and twenty-four hours

after the perforation showed a mortality of 50 per cent. Bennett, in 1898, published six cases, all of whom recovered.

(*C*,) *Subacute Perforation: Subphrenic or Perigastric Abscess.*—A slow leakage through the floor of an ulcer tends to the formation of an encysted abscess. This abscess may be discharged into the stomach and the pus vomited: it may perforate the colon and give rise to a gastrocolic fistula, the special sign of which is fæcal vomiting without intestinal obstruction: the pus may travel up behind or through the diaphragm and cause a foul empyema: it may burst into the pericardium and prove fatal, or into the lung and be coughed up. A subphrenic abscess may point and burst through the abdominal wall at or above the umbilicus.

The diagnosis of subphrenic or perigastric abscess is aided by a history pointing to gastric ulcer, but there may be absolutely no history preceding the development of the abscess, as in a case recently under the writer. The development of the abscess is indicated by the fever pointing to suppuration, and a collection of fluid and gas below the diaphragm, as shown by a tympanitic percussion note, and sometimes by emphysema or œdema of the skin. Generally the abscess is to the left side, but it may extend up in front of the liver to the right; it bulges forwards or pushes the diaphragm upwards. It is difficult or impossible in some cases to distinguish a subphrenic abscess marked by pushing up the diaphragm from one that has already extended through into the thorax. An early exploration should be made through an incision in front. A trocar or aspirator is useless; if pus is reached, an incision must follow; if there are no peritoneal adhesions, the withdrawal of the trocar may allow of pus escaping into the peritoneal cavity. A negative result of the puncture gives no information at all, and may lead to harmful delay. Generally, an incision is made in front and a tube or strip of gauze inserted. When the abscess extends backwards it is as well to make a counter-opening behind and to the left. The thorax is opened by removing a portion of one or more ribs, and the pleural cavity is filled with gauze. If the pus is still below the diaphragm, this structure is fixed to the upper margin of the thoracic wound so as to shut off the rest of the pleural cavity. Then, forceps are pushed through the diaphragm and the opening stretched. In a successful case under Dr. Allchin, the writer resected a portion of three ribs, and carried a long strip of gauze through the lower pleural cavity downwards and behind the diaphragm. The long track gradually filled up under daily dressing, the patient saying that he could taste the iodoform.

(*D*,) *Chronic Non-perforated Gastric Ulcer.*—A chronic gastric

ulcer which has not yet perforated may call for surgical treatment on account of adhesions, hæmorrhage, pyloric spasm, and stenosis with dilatation, a bilocular or hour-glass stomach, or stenosis of the cardiac orifice. Apart from these complications, does the chronic ulceration itself stand in need of surgical interference? If there is severe and persistent pain after meals, with frothy vomiting containing mucus, shreds, etc., especially with loss of flesh, unrelieved by a course of medical treatment, then an operation should be advised. Fournier, Flexner and Mackay have described syphilitic ulceration and hæmorrhage rapidly cured by iodide of potassium, but in all these cases the patients have had well-marked syphilitic manifestations. The object of the operation is, in the first place, exploratory: adhesions, pyloric stenosis, or a malignant tumour may be met with.

An ulcer on the anterior wall, not close to the cardiac or pyloric orifices, with a thin floor but without much induration around it, may be folded in and fixed by a double row of Lembert's sero-muscular sutures, with the object of obtaining atrophy of the invaginated portion. If there is a marked zone of induration which prevents invagination, excision of the ulcer is indicated, the line of removal being carried through healthy tissue. Hæmorrhage is arrested by ligaturing any bleeding point and then bringing the edges together by a suture passed through all the coats; this is covered in by a superficial sero-muscular row.

If a single ulcer can be felt on the posterior wall by passing the finger behind the stomach through an aperture in the gastrocolic omentum, the ulcer may be exposed through an incision in the anterior wall, cleaned of *débris*, and its floor then seared by the cautery. When the ulcer is near the pyloric orifice, or there is widespread destruction or atrophy of mucous membrane, as shown by a diminution of hydrochloric acid, gastro-enterostomy should be done.

If there is much ulceration near the cardiac orifice or end of the stomach, gastrostomy may be performed, or enterostomy (Furner), in order to place the diseased portion of the stomach at rest for a while.

(*E*,) *Adhesions of the Stomach.*—The principal causes of adhesions are intrinsic, chronic ulceration being the common cause. Adhesions may arise from extrinsic causes, such as injury (Kroenlein), gall-stone colic (Marchiafava), or umbilical hernia; also, as has been mentioned, gastric fistulæ, whether produced accidentally or by operation, are liable to give rise to the same troubles.

The chief sign of adhesions is pain, gastralgia in the epigastrium, exaggerated by movement, and gastric distension, generally out of

proportion to other stomach symptoms and lasting unaltered for a considerable period. The pain may cause loss of weight owing to the patient not taking food from fear of causing pain, and there may be a rigidity of muscles, giving rise to the idea of a tumour. If the band compresses the pylorus, there are the special signs of pyloric obstruction; if the colon, then distension with chronic obstruction. Mayo Robson operated in 1893 for an adhesion compressing the pylorus. Terrier, also in 1893, was the first surgeon in France to relieve adhesions. It can hardly be said that the diagnosis can be definite: the operation commences usually as an exploration. A band may be found fixing the stomach to the abdominal wall, to the ring of an umbilical hernia, attaching the pylorus to the liver or to the colon. The thinner kinds of adhesions may be freed by dividing them between two ligatures, and so, by a comparatively slight operation, the patient be completely and permanently cured. If, however, the adhesions are very extensive, if the pylorus is closely adherent to the under-surface of the liver or gall-bladder, it would be dangerous or impossible to separate the adhesions. Gastro-enterostomy is to be done, and the most successful results may follow this operation. Merklen, however, had a case of extensive perigastritic adhesions following subphrenic abscess. He divided all except a thick one joining the liver to the stomach. As the symptoms continued, he operated the second time and cut away the adherent liver with the cautery. This measure was successful.

(*F.*) *Gastric Hæmorrhage.*—Gastric hæmorrhage is not the same thing as hæmatemesis, for, to say nothing of other causes, the latter may be due to a leaking aneurysm or varicose œsophageal veins. Terrier and Hartmann prefer the term gastrorrhagia. Gastric hæmorrhage may occasionally be traumatic where blood appears in the vomit immediately after an injury. Also, blood appears in the vomit in connection with cancer, but the question of surgical interference with the special object of arresting hæmorrhage arises only in cases of chronic ulceration. A latent gastric ulcer may open into one of the large branches of the gastro-duodenal artery, usually near the head of the pancreas, and is then suddenly fatal. Indeed, the patient may never vomit and the cause of death remain unsuspected until the *post-mortem* examination. The patient may suddenly vomit a pint or two of blood besides what is passed subsequently as melæna. Sometimes this hæmorrhage is preceded by a sharp pain; in others the patient feels suddenly faint, a sensation of rapid distension of the stomach with a warm fluid ensues, and then, with a scarcely perceptible effort, blood pours from the mouth. The patient is thus suddenly

reduced to a state of acute anæmia in which she may continue (especially if there is a continual leakage) for some time. Here we are confronted with an important and, as yet, undecided question. The patient has not died from the first unforeseen hæmorrhage. Will another occur, and, if so, will the second or some subsequent hæmorrhage prove fatal? The general opinion held by the majority of physicians hitherto is, that gastric hæmorrhage rarely proves fatal, and that one severe hæmorrhage having occurred, a second or subsequent one is not likely to prove fatal. But this question requires a thorough re-examination ; it requires to be looked at from the standpoint of the surgeon. The traditional view is probably a wide generalisation in which all cases of gastric hæmorrhage are included, the slighter with the more severe forms. The chronic cases of hæmorrhage, from being more often seen, are apt to impress the mind and to remain in the memory longer than cases dying suddenly, in which no thorough *post-mortem* examination having been made, the fact that it was due to hæmorrhage from an ulcer, which might have been amenable to surgical treatment, has escaped being recorded. At the present time there is certainly not enough known to warrant surgical measures after the first severe hæmorrhage, although further observations may tend in this direction, especially, perhaps, by exploding the notion that one severe hæmorrhage may be followed by a complete and permanent recovery. But after the occurrence of a second severe attack of gastric hæmorrhage a surgical exploration should be made. The reasons for this are that medical treatment alone cannot prevent its recurrence or do anything to actually arrest the hæmorrhage when it occurs. Moreover, the patient and friends must remain in dread of bleeding setting in at any moment. Two attacks of severe hæmorrhage can hardly arise except from a considerable ulcer which, even if it does not cause death by hæmorrhage, will eventually prove fatal in some other way if left alone. Less severe attacks of recurring hæmorrhage are due to small ulcers connected with the smaller arteries and veins at a little distance from the lesser or greater curvature, or are due to more or less widespread, yet superficial, excoriations of the mucous membrane, giving rise to capillary hæmorrhage. The patient is weakened and rendered anæmic by recurring losses of blood, becomes emaciated from lack of food owing to loss of appetite, pain, vomiting, or fear of exciting hæmorrhage. Granted, therefore, that recurring attacks of hæmorrhage, anæmia and emaciation can only go on until some fatal complication is set up, a surgical operation is clearly called for in such chronic cases.

The suitable time for the operation is as soon as the patient is fairly

convalescent from the last attack of hæmorrhage, yet before he has fully regained a normal pulse tension. During the convalescence preceding the operation, the patient should be kept in bed on a semi-solid diet with as little liquid as possible, the bowels well open, and iron given. To operate during the acute anæmia is a very hazardous procedure. Whilst bleeding is still going on, even if small leakages are continuing, the patient is so weak that success is most unlikely (Tubby), and in the present position of affairs the future of the operation may be unduly prejudiced. Upon opening the abdomen the source of the hæmorrhage may be found as a single ulcer, and it may be possible to tie the vessels on the outer surface of the stomach which supply the ulcer, and afterwards to tuck the ulcer in by sero-muscular sutures. Alternatively the ulcer may be excised. But if the ulcer is not made apparent by its induration, is on the posterior wall, or there are widespread excoriations, two courses are open, one to incise and explore the stomach for the bleeding point, the other to do gastro-enterostomy. The exploration of the stomach is the more severe, but the most satisfactory operation in a strong patient. A free opening is made longitudinally midway between the curvatures, and by passing the fingers through the gastro-colic omentum behind the stomach, the wall is pushed forward and the inner surface appears in the wound. An ulcer is cleaned of *débris* and foreign bodies. Küster successfully removed a cherry-stone embedded in a deep ulcer on the posterior wall near the pylorus. After cleaning the ulcer the surface is seared with the cautery. When there are only minute bleeding points or wide-spread excoriations, the successive portions of the inner wall must be examined under a good light, and any points likely to bleed touched with the cautery (Dieulafoy). In some cases, one of the larger gastric arteries may be tied on the outer wall of the stomach; the wound in the stomach is then sewn up. Pyloroplasty may be done if co-existing pyloric stenosis is present. Gastro-enterostomy may be employed when the ulceration cannot be defined without opening the stomach, an operation which the patient seems too weak to stand, its great value being to drain off excess of hydrochloric acid and the remains of food. It may also be done after the interior of the stomach has been explored, when very extensive excoriation or marked pyloric stenosis, not likely to be cured by the simpler pyloroplasty, has been found. A number of successful operations have now been recorded. I have used three of the methods, viz., ligature of the afferent artery, pyloroplasty, and gastro-enterostomy.

VI.—Simple Pyloric Obstruction.

The pylorus is obstructed by malignant disease, or the cause may be of non-malignant and inflammatory origin.

A kinking of the pylorus may be set up by displacement of the stomach by tight lacing, gastroptosis.

A spasm of the pylorus is a reflex result of an excess of acid in the gastric juice or of ulceration.

An organic stricture narrowing the pylorus is the result of ulceration and scarring of the mucous surface, of fibrous contracture replacing the sphincter muscles, or of inflammatory bands on the peritoneal surface.

A congenital hypertrophy narrows the pylorus in infants; whether this is to be looked upon as an inflammatory or a tumour formation is doubtful. The first case, a child six weeks old, was unsuccessfully submitted to gastro-enterostomy by Stern in 1898; since then others have succeeded.

(*A*,) *Signs.*—The special sign of pyloric stenosis is the retention of undigested food in the stomach with much fluid, gastric stasis. This gives rise to an increasing discomfort and distension after meals until it is relieved in the course of three or four hours by vomiting. The food vomited is undigested and generally mixed with much acid fluid. According to the duration the stomach becomes more and more distended, the patient more and more emaciated, and life a burden. So much is digestion arrested that the simplest food remains undigested. A patient of mine vomited, nearly unaltered, some orange jelly he had taken two days before, and in doing so recognised distinctly the taste of the orange flavouring.

In the early stages of pyloric stenosis, the stage of interest to the surgeon, it is impossible to distinguish with certainty the simple from the malignant cases. As time goes on the malignant ones become evident by the growth of the tumour, the simple by the increase of the symptoms and of the dilatation in the absence of a tumour. To maintain an expectant attitude, however, until the diagnosis is certain, allows the malignant disease to go too far.

Persistent pyloric stenosis with a steady loss of weight, even in the absence, on the one hand, of marked dilatation or, on the other, of a growing tumour, should become the indication for an exploration. Medical treatment by careful dieting, by administering drugs to prevent decomposition, and by systematically washing out the stomach, ought not to be continued beyond a month or so if the symptoms persist and the patient loses weight.

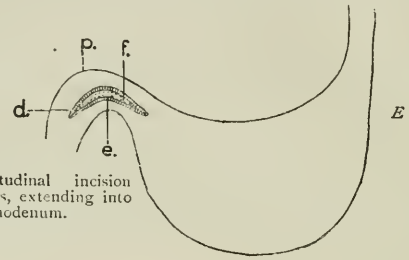
(*B*,) *Dilatation and Pyloroplasty.*—An enlargement of the pylorus

will raise the question of a new growth; it would be most dangerous to attempt the separation of an adhesion to the liver on account of hæmorrhage, to the pancreas for the same reason, and also for the almost certain danger of setting up peritonitis. Adhesions to the abdominal wall, or bands stretching to the colon, may be safely freed, yet if extensive they may re-form and then the case will relapse. Some enlargements of the pylorus may be simply inflammatory; a smooth and uniform swelling, softer than cancer and unaccompanied by any sign of glandular swelling, may suggest this. In such a case the surgeon must elect: (*a*,) To excise; (*b*,) Do gastro-enterostomy, and excise later if cancer develop; (*c*,) Close the wound. He should not do pyloroplasty because union will probably be imperfect and so fatal peritonitis follow, or the case will relapse. A surgeon may decide not to do pyloroplasty if he finds that the pylorus has been kinked by an external adhesion which can be divided, or if the stomach seems simply displaced.

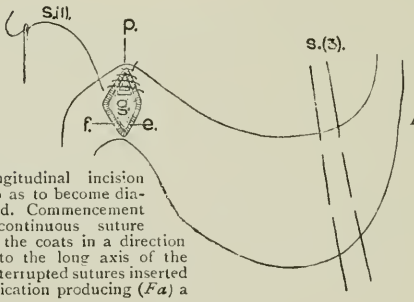
Operation of Pyloroplasty.—The patient is kept without food for twelve hours, but may take plenty of hot water which will either wash out the contents or be returned by vomiting. Meanwhile, nutrient enemata are administered. The stomach is washed out only when the patient does not object; patients often learn to do it for themselves and therefore no shock is caused. An incision is made longitudinally through the pylorus, midway between its upper and lower border, curving slightly towards the stomach and towards the duodenum so as to keep in the long axis of these organs. The incision should be three inches in length; a short one is apt to be followed by relapse; it is deepened on the stomach side first of all, or the duodenum may be entered if preferred; then a probe can be passed through the narrowed pylorus as a guide to its lumen. The wound is retracted so as to make it diamond-shaped, and is sutured at right angles to the line of incision, the end of the incision in the stomach being joined to the ending in the duodenum. The suture material to be used should be of fine Chinese-twisted silk, threaded on small round sewing needles. It should be inserted continuously, with a fixing loop after every fourth or sixth puncture, in two rows; the deeper row includes all the coats, the superficial row is sero-muscular only and extends a little beyond the deep row at either end. With respect to the difficulties of the operation, it is only done when the pylorus is well in view, not when buried in adhesions; the narrow lumen of the pylorus can be exactly divided longitudinally if the stomach (or duodenum) is entered first and a probe passed through. All that should escape from the stomach is a little frothy gastric juice, which can at once be sponged away;

it is, as a matter of fact, not septic owing to the presence of the hydrochloric acid. As to the hæmorrhage which occurred in Loreta's operation, any specially bleeding point in the mucous membrane or submucosa may be tied, but the hæmorrhage is all stopped by the

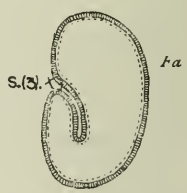
Diagrams of Pyloroplasty and Gastroplication.

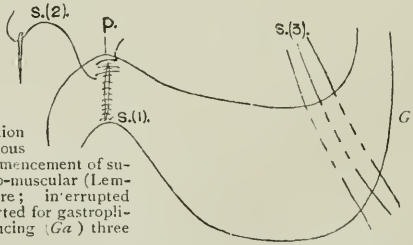


E. — Longitudinal incision through pylorus, extending into stomach and duodenum.

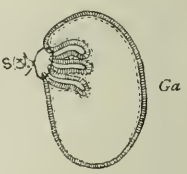


F. — Longitudinal incision retracted so as to become diamond shaped. Commencement of deep continuous suture through all the coats in a direction transverse to the long axis of the pylorus. Interrupted sutures inserted for gastroplication producing (*Fa*) a single fold.





G.—Completion of continuous suture; commencement of superficial sero-muscular (Lembert's) suture; interrupted sutures inserted for gastroplication producing (*Ga*) three folds.



(*d f*,) Visceral peritoneum; Muscular coat; (*f*,) Mucous membrane; (*g*.) Cavity of stomach; (*p*,) Level of pylorus; (*s* 1,) Continuous deep suture through all three coats; (*s* 2,) Continuous superficial sero muscular (Lembert's) suture; (*s* 3.) Interrupted sero-muscular sutures.

Fig. 36.

approximation of the edges by means of the deep suture through all the coats. I have always found that the continuous suture does excellently; it is much quicker and gives a better apposition than interrupted sutures. There is no occasion for inserting a bone bobbin. Failure of union will not occur except when the case is wrongly selected, *e.g.*, when the pylorus is much hypertrophied or doubtfully malignant. Relapse may occur when there has been much previous ulceration and scarring. In a doubtful case pyloroplasty should be chosen as the less severe operation; it allows the patient to regain strength, and if it does relapse gastro-enterostomy may be done later. After the operation the patient is supported by nutrient enemata until recovery from the anæsthetic, then is tried with small quantities of water. As soon as the water is kept down and the patient is without nausea, liquid food in increasing amount can be given.

If the case on exploration appears unsuitable for pyloroplasty and is certainly not malignant, gastro-duodenostomy or gastro-jejunostomy should be done. If doubtfully malignant, the choice lies between pylorectomy and gastro-jejunostomy.

Spasm of the Pylorus.—The symptoms of pyloric stenosis are of reflex origin, so that the pylorus at the operation is found in appearance and consistence not to differ from the normal. Jaboulay operated with the object of doing Loreta's operation, but instead of opening the stomach he invaginated the wall with his finger and pushed the fold on through the pylorus. By thus stretching the pylorus, the vomiting from which the patient had suffered quite disappeared. They are very suitable cases for pyloroplasty, and several patients sent me by my colleague, Dr. Murrell, have been permanently relieved.

(*C*,) *Gastroplication for Dilated Stomach.*—The idea of reducing the size of a dilated stomach seems to have been put in practice by several surgeons in different countries quite independently. Bircher, of Aarau, was the first to operate, in 1891; Weis, of New York, followed in 1892; Bennett did the operation in London in 1893; Brandt, of Klausenberg, did his case in 1894; and Faure, of Paris, thought his operation also novel in 1897.

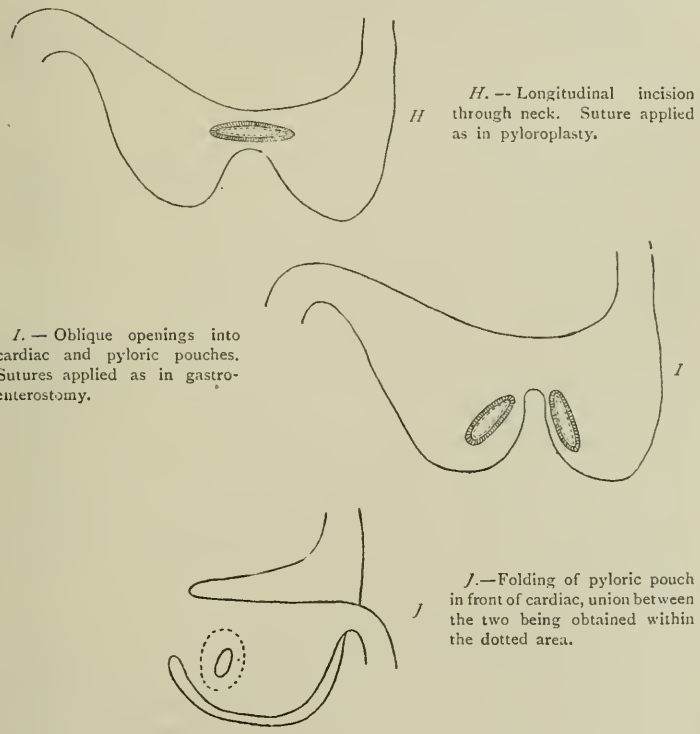
The operation consists in reducing the size of the stomach by making folds or tucks along a line running midway between the greater and lesser curvature on the anterior surface. Its object is to immediately reduce the size of the stomach so as to prevent the collection and decomposition of the contents, the folds undergoing atrophy. The operation has been much objected to, having been found useless. It appears to be a complement of pyloroplasty; it is

clearly useless to reduce the size of the stomach when the fluid cannot escape freely. The tucks must be so fashioned as to leave the pylorus the lowest, so that fluids run freely from the œsophagus towards the pylorus. Gastro-enterostomy is preferred by many, to which it may be objected that the operation is more severe and less natural, as evidenced by the tendency to regurgitation. As an addition to pyloroplasty, gastroplication has acted well in my cases. The following observation has confirmed me in this view: A very emaciated and exhausted patient was admitted with a bed-sore and alkaline urine, with pus. Her illness was found to be entirely the result of long-standing pyloric stenosis with enormous dilatation. After a consultation with Dr. Murrell, I did pyloroplasty, and made a series of large folds from the cardiac end nearly to the pylorus. After the operation the patient could take fluid and semi-solid food given her without any of the old symptoms, her bed-sore nearly healed, and the urine became acid and almost free from pus following frequent bladder irrigation. After three weeks she got up, then developed bronchitis, went back to bed, and died about six weeks from the operation. At the *post-mortem* the stomach formed a thick tube leading from the œsophagus to the pylorus, through which the index finger easily passed. The folds had much shrunken, the mucous membrane had undergone so much atrophy that the use of the stomach as a digesting organ had practically disappeared. This seems to be the value of combining gastroplication with pyloroplasty, so that the food shall no longer be delayed in the stomach, where, owing to long-standing atrophy, it cannot be digested and must decompose. On reference to the diagrams the methods of inserting the sutures will be understood.

(*D*,) *Kinking at the Pylorus from Displacement of the Stomach: Gastroptosis* (*Glénard's Disease*).—Glénard, of Lyons, in 1885, drew attention to the forms of displacement of abdominal organs, and Treves has written on the same subject. The intestinal tract is ten to fifteen times longer than the distance between the mouth and the anus; it is thrown, therefore, into various loops, each with a special suspensor or mesentery. By the displacement, kinking takes place, leading to partial or complete obstruction. The stomach is the highest of these loops, and its displacement is recognised by percussing its outline. It may or may not be accompanied by moveable kidney, displaced liver, transverse colon, or pelvic organs. The general treatment for Glénard's disease is a belt supporting and pressing up the intestines, and drugs for dyspepsia and constipation. Exceptionally this is not sufficient, and Duret, of Lille, in 1895, first practised gastropexy. He fixed the pylorus and lesser curvature to the abdominal wall by the

following method: He made a median epigastric incision, but in the upper part of the wound left the peritoneum and transversalis fascia undivided. He then passed sutures from the lesser curvature through this undivided fascia and peritoneum, and thus obtained a firm hold for the sutures. Of course, if the displacement is complicated by pyloric stenosis and dilatation, this operation would not be sufficient.

Diagrams of Hour-glass Stomach and Gastro-gastrostomy.



H. — Longitudinal incision through neck. Suture applied as in pyloroplasty.

I. — Oblique openings into cardiac and pyloric pouches. Sutures applied as in gastro-enterostomy.

J.—Folding of pyloric pouch in front of cardiac, union between the two being obtained within the dotted area.

Fig. 37.

(*E.*) *Hour-glass or Bilocular Stomach.*—This is the result of ulceration and scarring, the stomach being constricted in the middle, and the two halves communicating with one another by a narrow channel. It would generally cause increasing dyspeptic symptoms, but it is

doubtful whether it can be diagnosed beforehand. The bilocular shape of the stomach may be noted when distended. An œsophageal tube being passed, it may empty the cardiac half, but being pushed on, fluid may commence again to flow. The fluid has been heard by the stethoscope trickling from one half of the stomach to the other as the patient was turned from one side to the other (Burney Yeo). The X-rays have been said to make a shadow between the two halves. Generally speaking, the condition, although suspected, is not diagnosed until the stomach is exposed.

An hour-glass stomach has been treated in various ways. Wölfler, in 1895, made a free anastomosis between the two sacs, and this appears to be the most suitable, but owing to the diseased condition of the stomach, leakage may take place at a suture (Eiselberg). Others have operated by the method adopted for pyloroplasty (Watson Cheyne). This may be done when there is not much scarring and the contraction not markedly indurated, but if it forms a thick mass with a very narrow opening, the anastomosis or gastro-gastrostomy of Wölfler is the best. Tuffier tried gastro enterostomy, connecting the cardiac sac with the intestine, but the symptoms continued until he had made a second free anastomosis between the pyloric pouch and the intestine, then all symptoms disappeared. A more severe, but perhaps more satisfactory, operation would be to resect the central portion with the neck between the pouches, but apart from the severity of the operation in an emaciated patient, the adhesions to the head of the pancreas would generally prevent the operation from being carried out. Watson united the two sacs by turning the pyloric forwards upon the cardiac portion, using the strictured neck between the two sacs as a hinge. Wölfler's and Watson's plans require a freely moveable stomach. When the stomach is fixed by adhesions the plastic operation is the most suitable.

VII.—Stenosis of the Œsophagus and Cardiac Orifice: Retrograde Dilatation.

It has been already stated under the subject of foreign bodies that gastrotomy has been done and the cardiac orifice explored. The cardiac orifice has also been dilated by bougies and the fingers, and by that means retrograde dilatation of strictures of the œsophagus has been possible, when attempts to traverse the stricture from above were prevented by the bougie entering an œsophageal pouch above the stricture.

Cardioplasty, the application of the operation carried out on the

pylorus to the œsophageal opening, has been done experimentally on dogs and on the cadaver, but is apparently too difficult an operation for success to be likely (Levy). The dilatation of the cardiac orifice was done by Loreta soon after his pyloric operation in 1883. Richardson examined this subject in dead bodies in connection with his successful extraction of a tooth-plate in 1886.

Loreta, in 1889, not only dilated with success the cardiac orifice, but also the pylorus at the same time. Kendall Franks, in 1894, dilated the œsophagus successfully by the retrograde method. In addition to passing bougies, a string has been threaded and passed through ; then, by holding the two ends taut and see-sawing, strictures have been partly cut through.

VIII.—Cancer of the Stomach.

(*A*,) The preparation for removal of cancer is similar to other operations on the stomach ; the patient is fed by nutrient enemata for twelve hours and given hot water to drink. The stomach is washed out only when it can be done without distressing the patient.

After opening the abdomen through a median epigastric incision, which can be afterwards extended downwards or horizontally, the surgeon has first to make out that the disease is probably cancer, and secondly, whether, being cancer, it is removable. A doubt as to cancer is raised when the pylorus is uniformly enlarged ; if nodules appear on the surface, or irregular extensions or glandular enlargement, the disease is probably cancer. A uniform enlargement with considerable dilatation, the symptoms having been present for some months, and even when there is a soft enlargement of glands, is consistent with an inflammatory origin. Here, the duration of the symptoms without the development of an undoubted mass of cancer will support the inflammatory view. If the pylorus is enlarged yet buried in a mass of adhesions, a diagnosis is not so urgently necessary, as pylorectomy is contra-indicated in either case.

A second point to be made out is whether all the cancer can be removed by cutting through healthy tissue. Partial operations, whether leaving parts of the main growth or of the enlarged glands, should never be attempted ; they are useless, harmful, and tend to bring the operation into discredit. It is not only necessary to find that the disease is free by surface palpation ; one finger must be introduced into the gastro-hepatic omentum and the other through the gastro-colic omentum. The fingers should meet behind the pylorus and feel that there are no adhesions between the main growth and the head of the pancreas, nor any enlarged glands. The finger

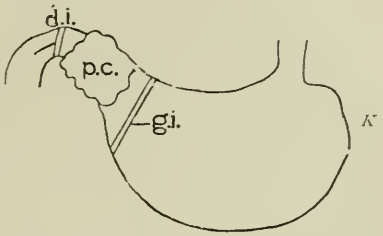
will recognise, however, the normal band or posterior ligament passing between the pylorus and the head of the pancreas. All adhesions, except those connecting the tumour with the abdominal wall, contra-indicate operation. Their separation is immediately dangerous from hæmorrhage or from the suppuration and peritonitis which so often follow separations of adhesions to the pancreas. The separation of adhesions has been fatal owing to hæmorrhage from the liver, ligature of the gall-bladder or duct with extravasation of bile, wounding of the vena porta or vena cava, gangrene of the stomach owing to ligature of the gastro-duodenal artery, or from injury to the duodenal vessels beyond the line of excision. Glands and masses infiltrating the mesocolon have been removed, including the excision of the portion of transverse colon, followed by recovery (Roux, Manteuffel, Kocher). Undoubtedly, the most important preliminary is to exclude the adhesions posteriorly to the pancreas by examining with the fingers before commencing the operation.

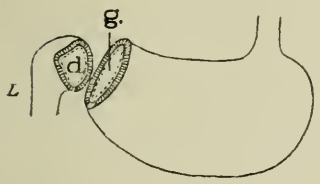
(*B*,) *Pylorectomy with End-to-end Union: Billroth's First Method.*—The tumour is first isolated by ligaturing off the gastro-hepatic omentum above and the gastro-colic omentum below, then drawing forward the pyloric tumour, and protecting the peritoneum by sponges. Glands along the lesser curvature and in the gastro-colic omentum are at the same time dissected out. The lumen of the stomach and of the duodenum is next shut off. This may be done by passing a piece of elastic tubing or a very thick piece of silk ligature and fixing with a clamp; but this plan puckers up the ends inconveniently. Large safety pins may be used with a piece of flat sponge between the upper bar and the gut. Special long clamp forceps are used with springing blades, closing by a ratchet; the blades may be covered with drainage tubing. Two flat bars of glass or metal may be passed, one in front and one behind, and their ends fixed together by rubber bands. There are also other methods; *e.g.*, an ordinary pair of clamp forceps are passed behind, one end of a piece of rubber tubing is clamped in the jaws of the forceps, and the tube is then brought over the gut and fixed to the handle of the forceps; a piece of flat sponge may be slipped between the tube and the upper surface of the gut. In this way there is elastic pressure without any special apparatus, yet the ends of the stomach and duodenum are kept flat, not puckered up. The line of incision should run wide of the obvious disease by at least an inch, and the mucous membrane must be cut quite up to, or a little beyond, the level of the other coats. The main bleeding vessels are clamped and tied after the completion of the excision. Next, Morison's plan is adopted of

enlarging the duodenum so as to fit the stomach, viz., by making a longitudinal incision in it on the aspect opposite to the mesentery. The ends are united by two rows of sutures (the deep row through all the coats, chiefly in order to control hæmorrhage and to fix the ends),

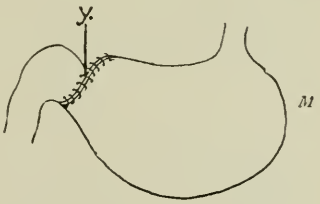
Diagrams of Pylorectomy.

K.—Lines of incision, including longitudinal incision after Morison to enlarge the duodenal end.

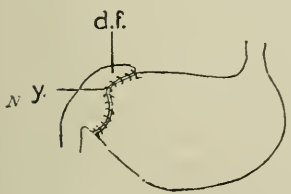




L.—Gastric and duodenal ends ready for suture.



M.—Gastric and duodenal ends united.



N.—Fold of duodenum drawn over the Y-shaped union.

(*d*,) Cavity of duodenum; (*di*,) Duodenal incision; (*g*,) Cavity of stomach; (*gi*,) Gastric incision; (*pc.*) Pyloric cancer; (*y*,) Y-shaped union; (*df*,) Duodenal fold to cover over Y-shaped union (If the duodenal opening can be made equal to that of the stomach, there is no need for this folding over.)

Fig. 33.

the superficial row, sero-muscular, or Lembert's sutures to prevent leakage at the suture holes.

Finally, a second modification of Morison's is adopted, the folding the slack duodenum over the line of union and fixing it with sero-muscular sutures. The best suture to use is the continous one with an occasional fixing loop composed of fine round sewing needles and Chinese-twist silk. First of all, the superficial sero-muscular row is inserted behind; next, the deep row through all the coats is completed; and finally, the superficial sero-muscular row is inserted. Other sutures used are the interrupted and Halsted's quilted suture; if so, all the needles must be threaded and ready to hand, or the operation will be unduly prolonged.

The chief after-treatment is concerned with the weakness of the patient. Nutrient enemata with brandy and suppositories should be begun at once and continued every three hours or so. As soon as the patient can keep it down, a little brandy and water or champagne may be given by the mouth, and liquid food follows.

The chief modification of this operation is pylorectomy with gastro-duodenostomy, the insertion of the end of the duodenum into a fresh opening made in the posterior wall of the stomach. It is the method adopted by Kocher in 1893. The opening into the stomach is completely closed by a double row of sutures, then a small opening, corresponding to the lumen of the duodenum, is made into the stomach and the duodenal end joined. A variation of this is to close the duodenal end and all the stomach opening except the lower end, which is made to anastomose with a loop of the jejunum. The matter is still in doubt, but Morison's modifications appear to overcome the objection to the unmodified Billroth's operation, viz., the inequality in the lumen of the stomach and duodenum, and the liability for a leak to take place at the Y-shaped junction. Kocher's modification is somewhat longer and more difficult to carry out. This operation has been done by using Senn's bone-plates (Rawdon), Murphy's button, or other special apparatus, but there does not appear to be any necessity for these complications.

(*C*,) *Pylorectomy with Gastro-enterostomy: Billroth's Second Method.*—The objection to it is that the complications connected with gastro-enterostomy are introduced, and it should be reserved for special occasions. The tumour is excised, and then both the stomach and the duodenum are closed separately by a double row of sutures, after which a gastro-enterostomy is performed. It is required when so much of the stomach (or duodenum, which is rare) has to be taken away that the ends will not come together.

Gastro-enterostomy may be done first of all, and pylorectomy subsequently. This operation may be indicated when the disease appears most probably inflammatory, but if there is any suspicion of cancer, and the case is fairly operable, it is dangerous to allow the growth to progress. It has been proposed to do gastro-enterostomy first of all, and allow an exhausted patient to regain strength before the pylorectomy. Tuholske did this in 1891, doing the pylorectomy three months (!) later. Others have done the two operations at intervals varying between fourteen days and six weeks. But, as Czerny has found, patients are apt to put off the second operation, as they at first feel so much improved by the gastro-enterostomy and do not understand the urgent necessity of the second. It is only when a patient is too weak for pylorectomy that it should be postponed until a second operation.

(*D*,) *Resection of the Stomach.*—Cylindrical resection of the body of the stomach with approximation of the cardiac and pyloric ends is exceptionally necessary. Enough of the cardiac portion should be removed to reduce it to the size of the pyloric segment.

(*E*,) *Cardiectomy.* — Excision of the cardiac end has not been successful (Levy).

(*F*,) *Complete Gastrectomy.*—Nearly the whole of the stomach has been removed, the piece left undergoing considerable enlargement (Schuchardt). The complete removal of the whole of the stomach was done by Schlatter for diffuse carcinoma or cancerous induration of the whole of the wall of the stomach without adhesions or glandular enlargement.

IX.—Gastro-enterostomy.

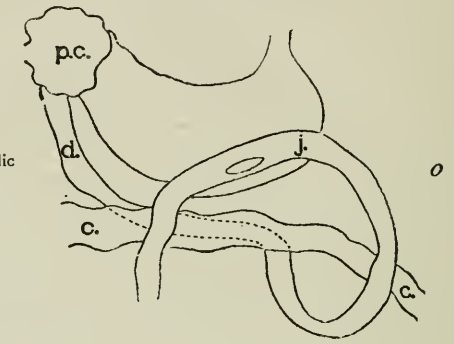
Gastro-enterostomy is the general term for an artificial fistulous communication established between the stomach and the intestine. Gastro-duodenostomy is the union between the anterior surface of the stomach and the descending portion of the duodenum. Gastro-jejunostomy is the union between the stomach and jejunum, but gastro-enterostomy is the better term when it is uncertain what part of the small intestine has been connected.

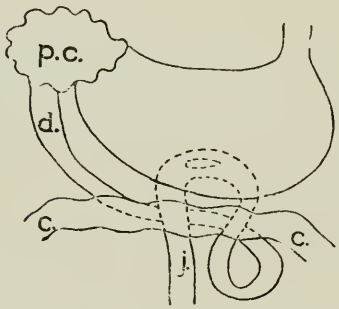
(*A*,) *Anterior Pre-colic Gastro-enterostomy.*—This was the first gastro-enterostomy. It was done by Wöifler in 1881, at the suggestion of his assistant, Nieoladoni, on a man, aged thirty-eight, with inoperable pyloric cancer. He joined up a loop of intestine 50 cm. from the duodeno-jejunal junction to the anterior wall of the stomach by bringing it upwards in front of the colon. The patient lived a month, and after death an orifice was found 2 cm. wide. The special difficulty about the operation is the selection of a loop of the jejunum,

since the ileum, and even the cæcum, have been joined up, and the patient has died of inanition. The duodeno-jejunal junction must be sought for below the great omentum and transverse colon, to the left of the vertebral column, and to the right of the descending colon.

DIAGRAMS OF GASTRO-ENTEROSTOMY.

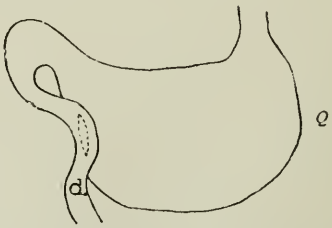
O.—Anterior pre-colic gastro-jejunostomy.





P.—Posterior retro-colic gastro-jejunostomy.

Q.—Gastro-duodenostomy.



(p c,) Pyloric Cancer; *(d,)* Duodenum; *(j,)* Jejunum; *(c,)* Colon

Fig. 39.

Measuring from the point where the jejunum begins, viz., at the end of the ascending and fixed portion of the duodenum, a point, 18 inches to 2 feet distant, is selected for apposition to the stomach in order that the transverse colon may not be compressed by the loop. To avoid the formation of a spur, and the regurgitation of bile, a length of 3 to 4 inches should be fixed in the long axis of the stomach. This remains the simplest and easiest operation, and, perhaps, is as successful as the other modifications. It must be done when the stomach is fixed by growth behind and the gastro-colic omentum and mesocolon are infiltrated.

(*B*,) *Posterior Retro-colic Gastro-enterostomy* was first practised by Courvoisier in 1883. He opened the gastro-colic omentum to expose the under-surface of the stomach, and then, through a hole in the mesocolon, drew a loop of intestine and fixed it to the posterior surface of the stomach. A narrow hole in the mesocolon is apt to cause strangulation. Hacker, in 1885, did the operation by raising the transverse colon and omentum, making an incision in the meso-colon parallel to its vessels, and drawing through the posterior wall of the stomach. When the stomach is dilated, this plan is easy; when it is contracted, it is difficult or impossible.

(*C*,) *Suture versus Murphy's Button.*—Two methods are employed to fix the stomach to the intestine, suture and Murphy's button. If a continuous suture is used, a loop of intestine is united to the stomach by a sero-muscular suture for at least 4 inches, then an opening is made into both the stomach and intestine, any bleeding from it ligatured, and the edges of the incision united by a suture through all the coats, and, finally, a superficial sero-muscular suture is inserted, the length of the other. The reason for fixing such a length of loop is to avoid a spur which will turn the bile into the stomach and set up vomiting. The sutures, instead of being continuous, may be inserted by Halsted's method. Murphy's button is also very widely used for gastro-enterostomy, and has quite superseded Senn's bone-plates. The choice between suture and Murphy's button is one which each surgeon decides for himself. The suture appears to be best, as being simpler and not liable to the special complications attending Murphy's button, and I do not think that with practice there is any appreciable difference as regards time. The Murphy's button must be well made of the original type, small, its closure neatly adjusted so as to compress enough and not too much. According to Murphy, there is no occasion for any additional suture, and, indeed, the operation loses thereby its merit of speed. Czerny has used it in more than one hundred cases without a failure

attributable to the button. Murphy's button has failed owing to the surfaces separating and fatal fæcal extravasation taking place ; the button may fall back into the stomach and set up so much trouble that it has to be removed ; the button, in passing, may become arrested, and perforation has been distinctly traced to its influence. Moreover, as a small button must be used, the opening is apt to contract and become practically useless.

Complications.—Regurgitation of bile is the important complication following gastro-enterostomy which has not yet been overcome ; indeed, Hartmann says that evidences of bile are to be found in the stomach of every case after this operation, and this may cause the patient to vomit until he dies exhausted. Where there has been a chronic regurgitation of bile, secondary operations have been done to remove the spur which deflects the bile into the stomach. An anastomosis has been made between the duodenal or proximal limb of the loop and the jejunal or distal limb. The duodenal end has been cut off and implanted into the gut lower down. The best plan to avoid the regurgitation of bile is the fixation of a good length of gut to the stomach, and for this purpose the original pre-colic operation is, in my experience, the best. None of Kappeler's thirty-nine cases suffered from vomiting.

(*D*,) *Gastro-duodenostomy.*—This anastomosis allows the gastric contents to enter the duodenum above the bile papilla, and there is, therefore, not the danger of regurgitation of bile into the stomach. The operation was proposed by Jaboullay in 1892, and has been recommended by Mikulicz. It is most easily done when there is a dilated and moveable stomach with a free duodenum. It is an impossibility when the growth involves the pyloric third of the stomach and the duodenum. I have recently had a successful case in which, owing to adhesions, it would have been impossible to do either pyloroplasty or gastro-jejunostomy.

(*E*,) *Results of Gastro-enterostomy.*—At first the mortality was great for a palliative operation, 50 per cent. ; it has now fallen. In 1897 Czerny reported a mortality of 32 per cent. among ninety cases ; in the simple stenosis cases the mortality was only 10 per cent. In 1898 Carle reported an even lower rate among forty-eight cases, viz., 20 per cent. and 8·3 per cent. respectively. Tricomi reports out of twenty-one operations for simple ulcer, nineteen successes, 15 per cent. of whom had a history of hæmatemesis. Many cases of fibrous stenosis are wonderfully benefited, some are cured, and tumours thought malignant have quite disappeared. True cancer cases generally experience much immediate relief, and even put on flesh ;

this may last for three to six months before they again go downhill. Survivals of a year or more are doubtful. In Ahlsfield's case, however, the patient lived three and a half years after gastro-enterostomy, and after death, cancer was found obstructing the pylorus.

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STRABISMUS. *F. Richardson Cross, M.B., F.R.C.S.*

Javal[1] has published the results of his study, extending over thirty years, of the nature and treatment of various forms of squint. He lays special stress upon the necessity of endeavouring to establish binocular vision as a *sine qua non* of a true cure, as distinguished from the merely cosmetic results obtained by operation alone. He states that the steps by which a squinting patient arrives at perfect binocular vision are:—

(1,) Re-establishment of simultaneous vision in the two eyes, with diplopia, by overcoming the tendency to suppress one image.

(2,) Cure of the diplopia by fusion of the images.

(3,) Appreciation of relief by the complete perception and control

of the co-ordinated movements of the eyes leading to perfect binocular vision.

In order to establish the power of seeing with either eye separately, and to overcome the habit of suppression, he induces diplopia by continuous and complete occlusion of one or other eye with a bandage or a shade, and by binocular exercises with a candle and coloured glass or prism in front of the good eye, while in patients who have a very large squint, he advises immediate operation, with the same object. To obtain fusion of the double images, he first employs stereoscopic exercises with specially-prepared cards, such that each half of each card contains distinctive marks, by means of which he can tell whether the corresponding eye of the patient is being used or not. Having re-established binocular vision with the stereoscope, he next tests with an ordinary candle, trying to find a position in which the two images of the flame are fused. The patient is then encouraged to gradually increase his range of fusion by moving his head in various directions, while still continuing to see a single flame without suppressing either image.

To avoid the risk of unconscious suppression of one or other image in this exercise, Javal recommends that in some cases the image of the patient's face formed in a small hand mirror, on which is gummed a vertical band of black paper 2 cm. in width, should be substituted for the candle. By this means it can be readily ascertained whether the patient is using one eye or both. A further development of this plan for cultivating the habit of binocular vision is known as bar-reading (*lecture controlée*). In it the patient is taught to use his eyes binocularly when reading, by holding an opaque object such as a finger or a pencil, perpendicularly to the line of the eyes, between them and the print. This hides part of each line from either eye separately, although if they both work together properly, no break in the print is perceptible. In carrying out this exercise it is important to see that the patient really uses both eyes together, and does not move his head or the book when he comes to the break, so as to alter the part of the line which is hidden, or by alternately using each eye and suppressing the image of the other, tend to confirm his bad habit rather than to form a fresh good one.

There is room for the exercise of much judgment in the employment of these and other similar measures; no rule can be laid down as to how long each should be persevered with; but the author quotes so many cases in which he claims by their means to have really cured the disease, that a thorough trial of them would seem to be clearly indicated.

In the Bowman lecture for 1898 Priestley Smith[2] has discussed the etiology and educative treatment of convergent strabismus. From his study he concludes that :—

"(1,) Convergent strabismus is a disorder of innervation in which the visual centres fail to control the act of convergence. This act is thereby degraded. It becomes purely automatic and purposeless. It is excited by the associated act of accommodation. It is excessive because it is uncontrolled.

"(2,) The failure of control depends largely on faulty development of the visual apparatus. The fault, whether it be in the eye or in the central organs, is frequently hereditary. In many cases the power of control is lost through shock or illness during infancy.

"(3,) Hypermetropia, when of considerable degree, predisposes to strabismus, and sometimes causes it by demanding an abnormal effort of control. Hypermetropia of low degree does not account for strabismus in a child.

"(4,) The disorder is confirmed and perpetuated by suppression of the function of the squinting eye. In treating it we should aim at stopping this habit of suppression and establishing the habit of binocular control."

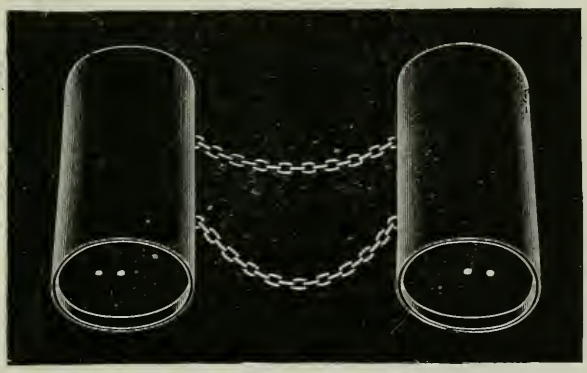

Fig. 40.—Priestley Smith's Fusion Tubes.

In his suggestions for the cure of the affection by educative measures, he has been influenced largely by the excellent work of Javal, referred to above, but in addition has devised an ingenious apparatus (*Fig.* 40) for ascertaining the existence of a potential power of fusion, and for cultivating it when present. The simplicity of this instrument makes it especially useful in children. It consists of two

tubes connected by chains, so that they can be turned in the direction of the visual axes in any case of squint. Each tube has in the

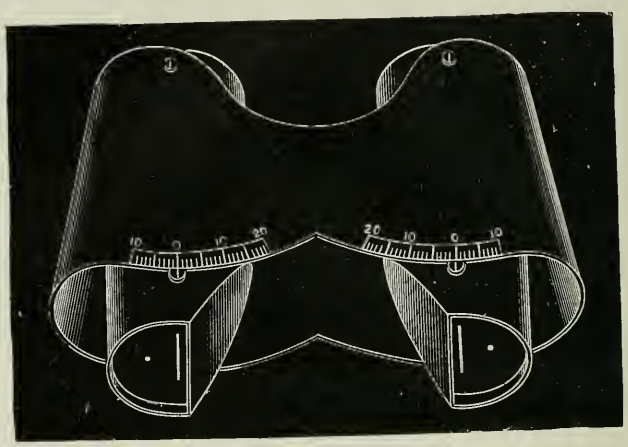

Fig. 41.—Priestley Smith's Heteroscope.

Fig. 42.—Bar Reading.

end next the eye a convex lens, the focal length of which equals the length of the tube, and in the other end a shutter with a small central

hole, covered with ground glass. A little to the outside of the central hole is a second hole, coloured red in one tube and green in the other. If a patient with a squint can, on looking through the instrument, see four spots—one red, one green, and two white—and then, by moving the tubes about, can find a position in which three spots only are seen—one red, one green, and one white—he possesses a potential power of fusion. This faculty can be cultivated by slowly rotating the tubes in various directions, to as wide a range as still allows of seeing three spots only. In order to measure the position of the axes of the eyes when fusion takes place, and the limits within which it is possible, the "Fusion Tubes," slightly modified, have been mounted in a frame which supplies them with fixed axes of rotation and a scale showing their angular movement. In this form the instrument is known as the "Heteroscope" (*Fig.* 41), and by means of it a record can be kept of the progress of cases.

Priestley Smith also suggests that bar reading can most conveniently be carried out by means of a bar of metal bent twice at right angles so that it can be held on the book by the thumb or forefinger, as in *Fig.* 42.

REFERENCES.—[1] "Manuel da Strabisme," Paris, 1896; [2] "Trans. Ophth. Soc.," vol. xviii, p. 17.

SUPRA-HEPATIC ABSCESS. *James Cantlie, F.R.C.S.*

Mr. Cantlie[1] applies the name supra-hepatic abscess to collections of pus on the upper surface of the liver, between the layers of the broad ligament of the liver. He assigns the cause of the abscess to a lymphangitis set up in this region, the result of chill after exposure. Mr. Cantlie divides liver abscesses into at least two varieties—the supra-hepatic and intra-hepatic varieties. The latter is the form of abscess set up by or associated with dysentery, whilst the former is totally independent of that disease, and yields pus which is wholly sterile, neither streptococci nor amœba coli being present in the pus for the first few days after the abscess is tapped.

Mr. Cantlie recommends the use of the trocar and cannula for tapping liver abscesses as recommended by Manson, and condemns incisions through the chest wall as a wholly unnecessary proceeding.

Dr. John Watson[2] describes a case of supra-hepatic abscess treated successfully by incision, resection of a rib, and subsequent drainage.

REFERENCES.—[1] "Brit. Med. Journ.," Sept. 9, 1899; [2] Ibid., Dec. 16, 1899.

SUPRA-RENAL CAPSULE (Tumours of the).

Prof. A. W. Mayo Robson, F.R.C.S.

I have no doubt that many cases operated on as sarcoma of the kidney, or as peri-renal sarcoma are truly diseases of the supra-renal

capsule ; the operation for removal has therefore probably been more frequently performed than the few recorded cases would lead one to suppose. The cases of excision, reported as supra-renal, that I have been able to gather, are twelve in number, though it is possible that others described under the heading of renal growths may have escaped notice.

The case below is an example of those that have come under my personal observation.

Mrs. L., aged forty-seven, was sent to me on March 23rd, 1891, by the late Dr. Kebbell of Flaxton, with the history that she had suffered from pain over the liver and at the right shoulder-tip for two years, the pain coming on in paroxysms and being accompanied by sickness and headache. She had never had an attack of jaundice, but at times "looked yellow in the eyes." Three weeks before seeing me, a tumour had been noticed below the right costal margin, since which time there had only been one attack of pain. Her general health had signally failed, and she had lost flesh. Throughout her illness there had been no urinary trouble, but great depression and loss of strength.

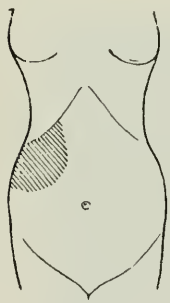

Fig. 43.

On examination, a smooth, solid tumour could be readily felt below the right costal margin, which moved freely on respiration, and was not tender to the touch or painful on pressure ; it was resonant on deep, but dull on light percussion. On pressure over the right loin the tumour could be moved forward, and then was more distinctly felt, and it seemed to be connected with the liver. The kidney could not be felt separately from it.

The diagram (*Fig.* 43) was made at the time, and was thought to represent its position and size. Although the absence of tenderness and the want of right shoulder-blade pain rendered the diagnosis of enlarged gall-bladder from obstruction of the cystic duct improbable, it was felt desirable to apply Zeimssen's test in order to clear up the diagnosis. The colon was therefore inflated through the anus, with the result that the tumour was pushed upwards towards the liver, with which it then appeared to be continuous.

This test satisfied both Dr. Kebbell and myself that the tumour was gall-bladder, and on April 23rd, 1891, I explored the abdomen through an incision in the upper part of the right semi-lunar line ; the tumour was then found to be free from the liver and gall-bladder, which were seen to be normal. It was found to be growing from the upper part

of the kidney, to which it was firmly adherent. The colon passed in front of the kidney but below the projecting tumour, which was thus pushed up when the bowel was inflated. After adhesions had been detached, the tumour with the kidney was brought forward, and the renal as well as numerous other vessels were ligatured. The mass was then removed. No drainage was employed.

On April 15th I had a letter to say that the sutures had been removed, and that the wound had healed and all was progressing satisfactorily. She was on the sofa in the third week. The tumour removed was found to be a sarcoma originating in the right supra-renal capsule, and invading the top of the kidney secondarily.

The results of operative treatment are not very brilliant, as only seven patients out of twelve operated on recovered ; these included two of my own cases, two by Mr. Henry Morris, one by Mr. Knowsley Thornton, one by Howard A. Kelly, Baltimore, and one by A. F. Jones, Omaha ; but it must be borne in mind that the disease is a necessarily fatal one without operation, therefore every recovery is a life saved.

The true secret of success lies in operating at an early stage of the growth, and if all cases could be handed over to the surgeon early, when the neighbouring viscera have not as yet become involved in the disease, the results would probably be extremely favourable.

I would draw attention to the following symptoms : (*a*,) Shoulder-tip pain. This was so well marked in all the three cases that I think it could not have been a mere coincidence, but was probably dependent on the disease. It may be explained by the fact of a small branch of the phrenic nerve passing to the semi-lunar ganglion ; (*b*,) Pain radiating from the tumour across the abdomen and to the back, but not along the genito-crural nerve ; (*c*,) Marked loss of flesh ; (*d*,) Nervous depression with loss of strength ; (*e*,) Digestive disturbance, flatulence, and vomiting ; (*f*,) Presence of a tumour beneath the costal margin, right or left, at first movable with respiration, but soon becoming fixed. It can be felt in the costal-vertebral angle posteriorly, and can be pushed forward into the hollow of the palpating hand in front of the abdomen ; (*g*,) Absence of urinary and of gall-bladder symptoms.

It will be noticed that these symptoms are common to all the cases, so that when taken together they form a basis on which to make a probable diagnosis.

In none of my cases was the peculiar bronzing of the skin characteristic of Addison's disease present, probably because only one organ was affected.

The Technique of the operation.—In the cases that I have operated on, a vertical incision through the outer margin of the rectus

enabled the tumour to be thoroughly explored, and at the same time served for its removal ; and, seeing that the diagnosis in these cases must generally be uncertain, I should always feel it wise to perform the operation in such a way that an efficient exploratory operation might be performed before removal is attempted, as it is clearly unwise to attempt the removal of a malignant growth if it has infiltrated and become adherent to neighbouring organs, not only because a partial removal can do no good, but from the fact that the hæmorrhage in such a case would be most difficult to control and the result from every point of view would be disastrous.

Having exposed the tumour it, if removable along with the kidney to which it is attached, can be brought forward into or through the wound, when it can be deliberately excised either with the kidney, as in my first case, or if more limited, as in my second case, with only a wedge-shaped piece of the kidney.

Drainage, if thought advisable, may be effected either through a lumbar stab wound or through the original incision.

No.	Operator	Reference	Date of Operati'n	Sex	Age	Nature of Growth	Result
1	Henry Morris	"Surgical Diseases of the Kidney" (1885) ("Brit. Med. Journ.," Jan. 7, 1893	1885	M.	51	Sarcoma	Died
2	Kn'sley Thompson	"Harveian Lectures," 1889 (Chas. Griffin & Co.)	1889	F.	53	,,	Recovery (well six years later)
3	Mayo Robson	"On Gallstones" (Cassell & Co., 1892, p. 80)	1891	F.	47	,,	Recovery
4	Henry Morris	"Brit. Med. Journ.," Jan. 7, 1893	1892	M.	63	,,	,,
5	Henry Morris	"Brit. Med. Journ.," Nov. 11, 1899	1894	F.	57	,,	,,
6	Howard A. Kelly (Baltimore)	"Johns Hopkins Hospital Bulletin"	1896	F.	53	,,	,,
7	J. M. T. Furney (Baltimore)	,, ,, ,,	1896	M.	53	,,	Died
8	Howard A. Kelly (Baltimore)	,, ,, ,,	1897	F	64	,,	,,
9	Dr. Roberts (Philadelphia)	"Intern. Clinics," Series iii, vol. i, p. 203	1897	—	—	,,	,,
10	Mayo Robson	"Brit. Med. Journ.," Oct. 21, 1899	1897	F.	62	Struma lipomatosa suprarenalis (Virchow)	Recovery (Patient well at present time)
11	A. F. Jones (Omaha)	"Annals of Surgery," April, 1898	1897	F.	24	Chronic diffuse inflam't'n, probably tubercul's	Recovery
12	Edward Ward (Leeds)	"Brit. Med. Journ.," Oct. 21, 1899	1899	F	1	Sarcoma	Died

SURGICAL SHOCK.

G. A. Hawkins-Ambler, F.R.C.S.

In the short space at my command, it would be impossible to deal exhaustively with the question of shock in its protean forms, and I shall not attempt it. There is little to record that is new to us, except in two particulars; but these are so suggestive and interesting that they may be mentioned in some detail.

We are all familiar with shock, or collapse, and the general explanation of it, as being due to exhaustion of the great nerve centres from over-stimulation by afferent impulses; with the sinking of vital activity under prolonged peripheral irritation; and with the especial influence on the whole nervous system of excessive stimulation of the spinal bulb, of which the general lowering of vitality is a direct result. We know, too, that shock varies indefinitely with the individual and the temperament, with the nature of the injury, the condition of body and mind, and so forth. Abdominal surgeons realise especially how frequently shock follows abdominal injuries, and that great loss of blood and prolonged exposure of viscera contribute largely to aggravate it to a point dangerous to life. Long operations, chilling of peritoneal surfaces, etc., multiply risks, and this is the case particularly in operations on the intestines.

The circulation is profoundly affected; the heart's action is embarrassed from various causes; the pulse irregular, frequently uncountable, or may be imperceptible in severe cases. And from first to last the condition appears to be bound up with cardiac action, the first symptoms of shock and the earliest signs of recovery being illustrated by the state of this organ.

But surgical shock is a larger question, possibly, than the mere over-stimulation of the medulla and the resulting depression of vital activity. It is, at any rate, more than an inhibitory action of the vagus. Shock is not only a group of symptoms associated with exhausted nerve centres, and exhibited in forms that are more or less easily analysed. By the new methods of the physiologist we are provided with definite explanations of the results seen, which, if not the sole explanation of shock, have been conclusively shown to accompany it, to largely explain it, and to offer something precise and estimable, something that can not only be more or less judged by the bedside, but demonstrated with precision in the laboratory.

I have shown[1] how the valuable experiments of Professor Sherrington[2] have opened out for us quite new views on shock, and have done much to explain the success of various methods of treating it, that were

founded more or less on empiricism. I may recall some of these conclusions here.

The effect of surgical injuries is shock—shock that we can, in a sense, measure in the increased specific gravity of the blood and the results to the circulation consequent on the effusion of a considerable quantity of plasma. This lost plasma means, of course, some inspissation or drying of the blood, and a more or less serious increase of peripheral resistance in the minute vessels, caused by the circulation of blood cells in a less spacious circulatory medium. And this multiplied resistance, distributed as it is over an immense area, means shock as we see it, and obstruction of the circulation that is translated into an embarrassed pulse, depressed vitality, and other symptoms too familiar to the surgeon. Thirst is one of these symptoms, and it indicates the urgent need of fluids till the exuded plasma is re-absorbed, or till the surgeon, recognising its meaning apart from mere discomfort, has taken steps to relieve it by the administration of fluids by mouth, rectum, veins, or peritoneum. I will briefly quote Dr. Sherrington's experiments, which show, not only that 'the fundamental phenomenon of inflammation is the abnormal exudation of intravascular fluid,' but the direct estimation of this in the degree of inspissation of the blood as indicated by its raised specific gravity. The injuries inflicted on various animals (usually the cat, dog, and less frequently, the rabbit) consisted usually in :—

(1,) The immersion of one or more extremities in water at a temperature of 52° C. for five minutes.

(2,) The application for the same length of time of sponges, steeped in 0·6 per cent. aqueous saline solution, to a knuckle of intestine brought to a small incision in the linea alba, the gut being carefully replaced and the wound closed; the whole operation being performed under strict antiseptic precautions.

(3,) Mechanical trauma, by the ligation of a knuckle of intestine. The blood was examined at least once before operation by the drop method, and was usually taken from the pinna of the ear. Amongst other results it was found that : (*a*,) The specific gravity of the blood was increased, while that of the serum was slightly lowered, or unaltered ; (*b*,) The hæmogoblin content of the unit volume of blood was increased ; (*c*,) The number of chromocytes in the unit volume of blood was increased ; (*d*,) Hæmoglobin in solution appeared in the plasma of the blood, and in that of the lymph in the thoracic duct, and in the exudation fluid of the limb ; (*e*,) The rapidity of clotting of the blood was increased, and the lymph clotted well. Omitting other changes, one may add briefly that the circulating blood becomes

inspissated in the sense that it loses some of its plasma, while its chromocytes do not escape, or at least not in direct proportion to the loss of plasma. And this loss of plasma is not, as might have been expected, equalised by increased entrance of lymph into the circulation *via* the thoracic duct, etc. The cause of the exudation seems to operate further on the secretory (if it be secretory) action of the lymphatic tissues which would otherwise try to balance it. This fallacy has led us hitherto to undervalue the importance of irritative exudation. Sherrington shows further that the phenomenon is not one of lost time between the escape of fluid from the circulation and its return thereto. For apoplasmia continues for as long a period as sixty hours after operation, the specific gravity of the blood remaining heightened, while that of the serum is unaffected It is this possibility of apoplasmia lasting four or five days after a carefully conducted surgical operation that is to be borne in mind by practical surgeons: to be considered as gravely as the more urgently felt question of hæmorrhage, and to be combated or prevented with every resource that is available. There is sufficient evidence that this exudation is considerable, that much fluid is lost during a time of crisis to the circulation, that peripheral resistance is consequently increased to a more or less serious extent, and it is essential that we recognise these important facts while we wait for further investigation as to the precise destination of the exudate. I leave over the question of marked changes as regards the leucocytes, though this has important bearings on bactericidal questions. What is necessary to understand is that, as even a simple incision results in a varying degree of drying of the blood, we must not confound shock resulting from apoplasmia with the depression of the great nerve centres that is possibly to some extent responsible for it but not wholly so.

I do not pretend that this apoplasmia is the sole element in shock. Collapse has long been recognised as being made up of very different elements, and this is merely another of them. But there is no constituent of this condition that excels this in importance, or that is so readily definable, as to act as a working guide and indication, a tangible standard of comparison by which we can measure our difficulties. It is simple enough in most cases to estimate the quantity of blood lost during an operation and the consequent risk incurred, but in addition to this we have this leakage of almost equally vital fluids going on to an amount we cannot estimate by the hæmorrhage seen, and which we can only say may be dangerously large after a comparatively small operation, and probably more so after greater

degrees of traumatism. This explains, too, why rapid operating is a feature of successful abdominal as well as of other branches of surgery; why a quickly performed operation may, other things being equal (the delay not arising from the inherent difficulties and complications of the operation), be successful where a prolonged one, with its exposure of tissues to various forms of irritation and the patient to the depressing effects of the anæsthetic, etc., may fail.

If we are to extend our definition of shock rather than to multiply its nomenclature, it might be well to include, too, those cases which die with all the symptoms of shock, but in which *post mortem* examination reveals the presence of acute sepsis, the poison probably acting fatally on the nerve centres. These cases are too frequently ascribed to shock as we have understood that condition; but it is because we have not looked in the right place for the indications of septic infection. Muscatello[3] has shown that the chief lymph tracts of the peritoneum pass through the anterior mediastinum, where are seen marked evidences of septic absorption; and H. E. Durham[4] has proved further, that in cases dying after abdominal section we may find the peritoneal fluids perfectly sterile, microscopically and culturally, while on the omentum and peritoneal surfaces may be found abundant proof that your patient has had a fatal dose of organisms. We shall have to be able to say that the regions enumerated are free from bacterial infection before it will be possible to absolve sepsis from being the cause of death, or of "shock," that comes very near it. Surgeons have long felt that this was so with many cases difficult of explanation, and it is well to possess clearer proofs of the complicated nature of "shock."

One of the most important contributions of the year to the literature of shock is from the pen of Dr. George W. Crile[5], who has performed a large number of experiments that help us to a better comprehension of the subject. He regards surgical shock as being due to impairment or paralysis of the vasomotor apparatus, rather than any specific disablement of the heart itself. But the fact that, when he cut out afferent impulses by "cocaine blocking" of the nerve trunks in operations on the extremities, and used antiseptic precautions, practically no shock was present, indicates the important part played by afferent impulses in inducing this condition. The walls of the blood-vessels are paralysed, and doubtless this paralysis extends to the the very minute vessels, and to more than the muscular coats, accounting for the plasmatic exudation to which Sherrington has drawn attention. This reflex paralysis extends to other parts of the

organism, as is shown in the effect of shock on muscular tissue everywhere. Crile found, too, that the higher the site of operation in the abdominal cavity, the greater the resultant shock. Operations in the pelvis cause least shock, but exposure of viscera largely increases it; and manipulations of viscera, especially when causing interference in the blood pressure, seriously increase shock, as might be expected.

As to the treatment of surgical shock, so much depends on our views as to the causes. There is much general treatment. For example, a patient is best fitted to undergo the strain of a severe surgical procedure if he come to it with a mind that is hopeful, or at least cheerfully resigned. Where he is not likely to dwell too painfully on the approaching trouble (in which case delay is probably dangerous) a short residence in pure country air is to be recommended. It has an excellent effect on the spirits, increases the general tone of the system, and in all probability promotes the activity of the phagocytes. Disease of the great organs naturally increases shock, and must be eliminated as far as may be; but apart from this, the administration of iron and quinine, or both, may be beneficial, as is shown by experience, and this good effect is due to something more than what we ordinarily understand as tonic.

As preliminary considerations, these naturally suggest themselves. The question of the anæsthetic follows; and where shock is expected to be severe, probably ether will be more advisable, or the mixture of ether and chloroform, 1 to 2, given in a Clover's inhaler without the bag. The operating room must be warm, 70° to 80° F. and additional precautions may be taken in the use of operating tables warmed by hot water; the application of hot bottles to the patient; the wrapping of the chest in absorbent wool, and the preliminary administration of an enema of beef tea and brandy, or of $\frac{1}{40}$ of a grain of strychnine hypodermically. Both these aids, especially the hypodermic use of strychnine, as was confirmed by Crile's observations, in smaller doses, may be advantageously repeated, or, at the conclusion of an operation of any magnitude, a hypodermic injection of $\frac{1}{6}$ grain of morphia may be used. This I frequently resort to in abdominal sections, but do not usually repeat, as in these cases we desire to avoid crippling the natural peristalsis of the bowel, which has so much to do with the prevention of peritonitis—probably, as Durham points out (*loc. cit.*) owing to bacterial deposition on the omentum being promoted by the peristaltic movements of the intestines; the omentum, in small animals at all events, becoming rolled up. As to the further use of drugs in shock, one might expect more beneficial results from the

administration of atropine than my own experience shows. Combined with morphia, it is a help, but strychnine or digitalin is of much greater service—sometimes of inestimable value. Beyond these, with the exception of brandy, which, given liberally, is of the highest value, and other diffusible stimulants, such as ether hypodermically, drugs appear to be of small service. Physiological considerations suggest a method of treatment that I have known of service, *i.e.*, slowly sipping hot water, the result of which is a gain in the tone of the pulse. In the dangerous form of shock where irritative symptoms are prominent, stimulants and morphia are to be resorted to, and rest procured; the body heat must be maintained by every means within our power, and liquid, stimulating, predigested nourishment given freely, but not without due care that we do not whip starving organs into an action that will be too excessive and exhausting. Carnrick's peptonoids, are good in these cases, and I have found **Somatose** of great service in intestinal operations, where a patient has become exhausted from vomiting and starvation, and is urgently in need of effective nourishment.

We ought, in addition, to raise the foot of the bed a few inches, *e.g.*, by placing small blocks or bricks beneath it, and maintain the patient in this position till the severity of the shock has passed.

These, however, are perhaps the commonplaces of treatment, established by experience and custom; but, considering the newer views on shock, we may extend them in other directions.

The experiments of Sherrington indicate that we must try to overcome the inspissation of the blood, and so relieve a circulation embarrassed from this and other causes, by the addition of fluid. The thirst, which is so noticeable a symptom of shock, is the cry of the tissues for fluid. It must be responded to, and the injection of normal saline, as Crile found, is the best means of supplying it. Now saline solution is readily absorbed from the rectum, and an injection of normal saline (roughly made by dissolving a teaspoonful of table salt in a pint of sterilised water) injected slowly, is as good a way as any of giving it. But one of the results of shock is the diminution or absence of muscular reflexes and the loss of muscular tone. We therefore see in too many cases, that the dilated sphincter permits the return of injected fluids from the rectum. In abdominal operations, as I have pointed out (*loc. cit.*) we often find it necessary to wash out the peritoneal cavity with hot saline solution in the prolonged operations which result in severe shock; and where this is not necessary for cleansing purposes, I have found it a help to pour one or two pints of saline solution into the

abdominal cavity at the close of an operation of any magnitude. There is evidence that this is absorbed, and probably the addition of a small quantity of spirit (say a tablespoonful of brandy to the pint or quart of normal saline) might assist its absorption to replace the exuded plasma. But there is evidence also that normal saline may actually increase the irritative exudation, and though we do not know what prevents the speedy reabsorption of this exudate, it is difficult to imagine any artificial serum that should be more readily absorbed than the plasma itself, if we could hit on some means of promoting lymph secretion. But results show that it is absorbed, and it is to be recommended as a means of treatment. But though there is an element of doubt about peritoneal absorption after operation (and everyone who has seen an abdomen re-opened after operation, and noticed the quantity of fluid that sometimes pours out twenty-four hours afterwards, will doubt its capacity under these conditions, although it has been shown by Wegner[6] to be able to take up from 3 to 8 per cent. of the entire body weight in an hour), there are other means of introducing saline into the vessels that are of undoubted efficacy. Direct transfusion into a vein is one of the best, and Cheyne and Burghard[7] advise that this should be done very slowly until the pulse is felt to become full and regular. Care must be taken to keep up the temperature of the injected liquid, to ensure its absolute sterility, to prevent the admission of air into the vein, and to watch the pulse and breathing the while. If dyspnœa follow, the injection must be stopped. Kelly's method is frequently adopted. He introduces saline into the submammary cellular tissue through an aspirating needle, to the extent of a pint or more. These injections may be repeated several times, and are useful when severe hæmorrhage has occurred. The practitioner caught with a case of post partum hæmorrhage, away from the usual appliances, can fall back on his hypodermic syringe; pushing the needle beneath the mamma and leaving it there, fill his syringe with saline and inject it repeatedly till the patient is tided over the crisis. When a large quantity has been injected under one mamma, more may be introduced on the opposite side, or into the cellular tissue beneath the clavicle. These are methods of particular importance in relieving the circulation that is embarrassed by the drying of the blood; its specific gravity is lowered, the percentage of red cells to fluid is restored, and shock relieved speedily and effectually.

Passing to the so-called shock that is really acute sepsis, we can only perfect our asepsis and try to prevent it in this way; the important thing is to recognise that it is sepsis, and not to

overlook sources of unexpected infection. But Durham's experiments already referred to, suggest other means of preventing this. He found that the preliminary injection of normal saline into the abdomen of an animal was sufficient to notably increase the resisting power of that membrane to various bacterial infections. He says (*loc. cit.*) "The point to be aimed at is to produce an ample leucocytosis in the peritoneal fluid, and also, if possible, to give a super-added specific protection by an aseptic intra-peritoneal injection introduced about twenty-four hours before proceeding to operate." When, therefore, we expect that operation will be specially liable to be followed by sepsis, we shall, some of these days, either inject into the peritoneal cavity normal saline, or, if we can form some idea of the nature of the germ or germs that will be met with, the injection of various sera will be resorted to for the production of immunity. The question whether experiments done on the guinea pig will prove equally efficacious in man, and the further question as to whether the results are due to the irritative exudation of leucocytes into the peritoneum, or to a general increase in their bactericidal power, must be left over for further experiment.

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SUTURES AND LIGATURES.

Priestley Leech, M.D., F.R.C.S.

Sneguireff[1] has used tendinous fibres from the ligamentum nuchæ of the reindeer for absorbable sutures and ligatures. The fibres are obtained by simple division of a fresh ligament, and are kept straight and untwisted. It is not so readily absorbed as catgut, but is easily manipulated, and can be sterilised by immersion in juniper oil, ether, or alcohol, sublimate solution, and then in sterile salt solution. He has used it with success in eighty-three gynæcological laparotomies.

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SYPHILIS.

C. F. Marshall, M.D., B.Sc., F.R.C.S.

SYMPTOMS.—*Early Cerebral Syphilis.*—Mingazzini[1] reviews cases of so-called early cerebral syphilis. Fournier and Hutchinson mention cases occurring between the first and second years. Gowers gives six months after infection as the shortest time known to him. Baudoin collected twenty-six cases occurring between three and eighteen months after the primary sore. Rumpf reported nine cases of cerebral syphilis in the first year. Neumann described several cases during the first year with cranial nerve paralysis, ophthalmoplegia, aphasia, epilepsy and optic neuritis. Pick reported the case of a man, aged fifty-eight, with a secondary rash, headache and defect of sensation of the right half of the face and of speech, developed six months after infection. Later there was increase of paralysis and death. The autopsy showed recent thrombotic softening in the posterior part of the right internal capsule, endarteritis obliterans in the right sylvian fossa and gummatous meningitis of the ventral surface of the pons. Miliary gummata were present on the inner surface of the dura. The author's case was a man, aged fifty, who contracted syphilis in 1896. Nine months afterwards, he had bone-pains and swelling of one testicle. This was followed by rapid progress of the disease, with headache, right ptosis, partial paralysis of face and tongue, optic neuritis, hemiplegia and aphonia, and death fourteen months after the primary infection. The autopsy showed gumma of the left testis, endarteritis obliterans in both vertebrals, the basilar and left sylvian artery, and at the posterior perforated space. There was partial thrombosis of these arteries, with corresponding multiple softenings. A large red softening involved the anterior and middle parts of the caudate nucleus, affecting also the lenticular nucleus, internal and external capsule. There were also adhesions of the right third nerve. The patient had previously to syphilis suffered from melancholia. It would thus appear that cerebral and vascular disease may ensue rapidly in predisposed subjects within one year after infection with syphilis.

Secondary Nervous Symptoms.—Fournier,[2] describes some nervous symptoms which may occur in secondary syphilis, and draws attention to the difficulty of diagnosis in the absence of distinct history. These symptoms are more common in women.

(1,) *Headache.*—This may be of three kinds : (*a*,) Troublesome, but not interfering with daily work; (*b*,) A form resembling migraine ; (*c*,) So severe as to render work impossible, and accompanied by vertigo, and in some cases by melancholia. The pains may be constant or intermittent. In the first form it is more severe in the

evening; in the second form it comes on every evening between five and seven o'clock, and may last for periods varying from several days to several months.

(2,) *Insomnia.*—Rarely met with, except in women. It may be due to headache, but may occur without it. The patient may pass several nights without sleeping.

(3,) *Asthenia.*—This is also usually confined to women, and may be so marked as to cause inability to follow the avocations of life. It may be so severe as to confine the patient to bed. The heart beats are feeble and the pulse almost imperceptible; the digestion is torpid; there is dulness of the senses and trophic functions are in abeyance. This condition may be mistaken for anæmia, tubercle or malignant disease. **Anti-syphilitic treatment** is followed by good results.

(4,) *Neuralgia.*—This may affect the sciatic or the branches of the fifth nerve, usually the supra-orbital. Fournier points out the importance of trying **Anti-syphilitic Remedies** in cases of obscure neuralgic pain.

Syphilis and Pregnancy.—Murray[3] quotes Fournier and Le Pileur as to the effects of syphilis on pregnancy. Fournier gives the percentage of deaths of children born of syphilitic parents as 85 per cent., based on one hundred and sixty-seven cases; such deaths including abortions, still-births and early deaths. Le Pileur, from observation of four hundred and fourteen cases, makes the death-rate 71 per cent. He then mentions the chief pathological changes in the placenta, these consisting mainly in an increase of fibrous tissue and cell infiltration into the villi with degeneration of the epithelial covering of the latter. He quotes Fränkel as giving differences according to the time of infection. If infection occurs during a fruitful coitus, there may be endometritis placentaris with overgrowth of decidual cells and connective tissue as well as changes in the villi. If syphilis is contracted before conception, there is gummatous endometritis placentaris. If infection occurs in the later months of pregnancy, the placenta is usually unaffected. Fräenkel states that infiltration of the villi with granulation cells, accompanied by increase in size and distorted shape, is characteristic of syphilis. To the naked eye the syphilitic placenta varies in appearance according to the time of death of the child and the time of expulsion. If the child is macerated, the placenta is soft and shiny; if the child is full term and alive, the placenta is pink, due to the thickened decidua; it often contains clots due to previous hæmorrhages, or thrombosis of the lacunæ. Cell infiltration and proliferation of decidual cells causes obliteration of blood-vessels and destruction of function. Hyperplasia of the

decidual cells causes fixation of the placenta at certain points, and leads to hæmorrhages. According to Ruge, 83 per cent. of premature and still-births are due to syphilis.

Syphilis in the pregnant woman may be acquired: (1,) Before pregnancy, when it presents nothing abnormal; (2.) From a primary sore in the father at the time of a fruitful coitus; the primary sore in the mother then appears earlier than usual (second week), and is more severe. This form of infection is most fatal to the child; (3,) From a secondary lesion in the male. If this occurs in the earlier months of pregnancy, it usually kills the child; if in the later months, the child is not so much affected; (4,) If both parents are syphilitic, the effect on the child is worst of all. As regards the limit when the disease may affect the child, it is difficult to state any time, for in two cases of Murray's, the child died from congenital syphilis twelve years after the primary sore in the infected parent. The diagnosis is often difficult owing to the primary sore being invisible or escaping notice in women. The father should be examined carefully whenever possible.

The treatment is easy to carry out if both parents are aware of the disease; but if the mother does not know of it, and the father will not agree to an explanation, treatment is difficult to carry out. The method of treatment suggested by Murray is that recommended by Fournier, viz., **Inunction.** When the infant is born it is best treated through the mother's milk by the administration of mercury to her. When the infant grows older it is sufficient to place **Mercury** ointment on a flannel binder. In case the mother is too weak to suckle her child, it must be brought up by hand, a wet nurse being of course not admissible.

Extra-genital Syphilis.—Brandis [4] describes ten cases of severe extra-genital syphilis occurring in medical men. All were healthy subjects from thirty to fifty years of age. The primary sore was on the finger in all cases. The cause of infection was in two cases obstetric manipulations in women with condylomata; three were caused by rectal examinations; two by opening buboes, and one after an operation for necrosed bone. All were severe cases, and the incubation period was usually more than four weeks. The sores healed with difficulty, and in some cases there was axillary suppuration. The secondary symptoms were severe and included rupia and necrosis of the nasal and long bones. In one case there was early necrosis of the palate, marked fever and rigors. All the cases were cured after prolonged treatment which, according to Brandis, was required owing to late diagnosis.

The after history is as follows: Four are still living and in good health; five to twenty-five years have elapsed since they were cured. Three have married and have healthy children. Six died, but only one from syphilis (cerebral).

Syphilis of the Uterus.—Legrain[5] reports three cases of syphilitic disease of the uterus: (1,) The first case, aged fifty, had a uterus enlarged to the size of a seven months' fœtal head, the fundus being three fingers' breadths above the pubis. The cervix was not discernible; the patient was cachectic, and had a greenish-yellow discharge from the uterus. Anti-syphilitic treatment reduced the uterus to its normal condition; (2,) The second case, aged fifty-four, suffered from metrorrhagia for four or five months. The uterus was uniformly enlarged, but not fixed; cervix normal; under **Iodides** the uterus regained its normal size, and the metrorrhagia ceased; (3,) The third case, aged thirty-eight, was diagnosed as one of interstitial fibroids. There was metrorrhagia, anæmia and wasting; the uterus was enlarged two fingers' breadths above the pubis. Cervix hard and enlarged, but not ulcerated or eroded. There was a papular secondary syphilide. Treated by **Calomel Injections** (gr. $\frac{1}{3}$) daily. In six days the rash was gone, the anæmia better, and the uterus smaller. Under a mixed treatment of **Proto-iodide Pills** and **Potassium Iodide,** the uterus soon became normal.

The author considers these cases to be parenchymatous metritis, due to diffuse cell infiltration of the uterus, rather than gummata. He thinks that some cases diagnosed as fibroids are really syphilitic.

Syphilitic Phlebitis.—Fournier and Loeper[6] describe two cases of phlebitis occurring in secondary syphilis and affecting the superficial veins of the limbs. They regard it as a periphlebitis probably affecting the superficial veins only. There is no fever, and little pain or swelling. The veins are felt to be thickened, and this thickening disappears under treatment in two or three weeks. The authors consider this manifestation of syphilis more common than is supposed, owing probably to its latency.

Syphilitic Joint Disease.—Pielicke[7] divides syphilis of the joints, according to Virchow, into two classes: (1,) Simple inflammatory: (2,) Changes due to syphilis. The first form may affect one or more joints, and generally affects the large joints, especially the knee. The symptoms are effusion and pain, especially at night. There is usually a remittent temperature which may lead to a diagnosis of acute rheumatism. This form generally occurs in the secondary stage. It sometimes occurs in hereditary syphilis. The prognosis is usually good under anti-syphilitic treatment but some cases become chronic

with thickening of the capsule, and occasionally ankylosis may occur. The second form is due to gummatous changes in the capsule and bones. It most often attacks the knee, then the small joints of the fingers and toes, the hip joint, the ankles, and lastly the sterno-clavicular joint. The symptoms are similar to those of the first form, viz., swelling of the joint, severe pain at night, and variable temperature. The function of the joint is damaged, and there is grating under manipulation. This form usually occurs in acquired, but may occur in hereditary syphilis. Ankylosis may occur in spite of treatment. Sometimes it is complicated by suppuration, periostitis, and osteomyelitis, and may require surgical treatment.

Syphilitic Jaundice.—Werner,[8] from examination of fifteen thousand seven hundred and ninety-nine cases of early syphilis, found fifty-seven cases (0·37 per cent.) of jaundice, which he considered to be specific. Catarrhal jaundice, early cirrhosis of the liver, and tertiary syphilis of the liver, were excluded. The characters of syphilitic jaundice are: (1,) It occurs in the early secondary stage; (2,) It is accompanied by fresh symptoms of syphilis; (3,) It re-acts to specific treatment; (4,) The onset is sudden and not accompanied by gastric symptoms; (5,) It generally appears with the first skin eruption, occasionally with relapses; (6,) Pruritus is rare, and xanthopsia only occurred in three of the author's cases; (7,) Hepatic enlargement is slight, and ascites never occurs. Syphilis with jaundice is usually severe.

Two views are given of pathology: (1,) Enlarged glands in the portal fissure; (2,) A papular eruption in the intestine causing obstruction by implicating the bile ducts.

Syphilis without a Primary Sore.—C. F. Marshall[9] reports an interesting case in which a typical attack of secondary syphilis occurred in a patient without a previous chancre. The patient, a man of twenty-five, was first seen in January, 1889, when he had gonorrhœa. In March he developed a polymorphous secondary syphilide, followed by injection of the fauces and mucous patches on the prepuce. He was under observation during the interval between January and March, but at no time was there a primary sore. Cases of syphilis in which a primary sore is absent, are well recognised by some Continental authorities, but most English surgeons are sceptical on the point.

Diagnosis.—At a meeting of the Society of Dermatology and Syphilology, in Paris, January 12, 1899, Julien reported that since 1895 he had used a binocular with glass lenses of cobalt blue glass as an aid to the diagnosis of syphilitic eruptions. By this means, he

says, eruptions can be seen before they are visible to the naked eye, and also eruptions can be observed months or years after they have apparently disappeared. When these are rendered visible by this means, he considers that the virus is still active in the skin, and that further treatment is required.

General Therapeutic Treatment.—The main principles in the treatment of syphilis were discussed at the recent International Medical Congress at Moscow, and several articles have been published of late in the medical journals. The chief points discussed are: (1,) Should syphilis be treated in the primary stage, or not till secondary symptoms arise? (2,) How long should treatment be continued? (3,) Should treatment be continuous, intermittent, or symptomatic? (4,) Which is the best form of mercurial treatment?

Schwimmer[10] thinks that treatment should be begun in the primary stage, and bases this opinion on the researches of Deutsch and Justus, who showed that the syphilitic virus may do much damage to the nervous system during the interval between the primary and secondary periods. Justus showed also that the blood pigment undergoes changes in the same period. Schwimmer thinks, therefore, that damage to the blood and to the nervous system may be prevented or diminished by early treatment. As regards duration of treatment, he advises energetic treatment with occasional intermissions for one year, and milder treatment with longer intermissions for another year; in all, two years' treatment. Fournier recommends three years, and Neisser five years, but Schwimmer thinks such prolonged treatment has a bad effect both morally and physically.

Zeissl,[11] on the other hand, is against the early or so-called "preventive" treatment. His arguments are as follows: (1,) Mercury does not prevent further manifestations of the disease, since fresh symptoms often occur during a course of mercury; (2,) Early treatment renders the organism less sensitive to the action of mercury, so that larger doses of the drug will be required in the case of a patient who has had "preventive" treatment, than in one who has not. He concludes that specific treatment of the primary sore has relatively little effect on the evolution of the disease, and therefore on theoretical and practical grounds the treatment of syphilis should not be begun till general symptoms occur. He continues treatment till all secondary symptoms have disappeared, and favours the "symptomatic" method, *i.e.*, limiting the treatment to the times of occurrence of actual symptoms. By the "chronic intermittent" treatment, recommended by Fournier, he thinks unnecessary quantities of mercury are absorbed. He does not recommend either

mercury or iodides in the absence of symptoms. Neumann[12] holds similar views to Zeissl, and mentions that out of one hundred cases treated by the "abortive" or early method in his clinic, not one escaped secondary symptoms. He states that mercury and iodine do not destroy the cause of syphilis, but only control its products, and that saturation of the organism with these drugs does not prevent relapse. The fact that later manifestations sometimes appear on the same sites as earlier lesions, shows that the cause of the disease has not been destroyed. In whatever way treated, he states that from 6 to 22 per cent. of cases develop tertiary symptoms. Neumann, therefore, concludes that the only rational system is the "*symptomatic*."

Whitla[13] takes a position half way between the two above schools, and recommends treatment during the primary stage if the chancre is a definitely indurated one, but not otherwise. He prefers chronic intermittent treatment, and considers inunction the best means of giving mercury. In private he also recommends **Plummer's Pill,** 5 grains twice a day (= 1 grain of calomel), increased to three pills a day in ten days. After three months this is changed to **Liq. Hydrarg. Perchlor.** and **Iodides.** A nine months' continuous treatment is followed by an interval of two or three months' rest; then a mild course of mercury and iodide every six weeks; then a rest of two or three months; and finally three months of iodides. Total duration, two years.

Taylor[14] recommends inunction of as much surface of the body as possible, and for this purpose he divides the body into eleven regions, which receive inunction in regular order, the scalp and beard being treated with **White Precipitate Ointment.** This idea is based on the statement that "small round-celled infiltrations round the lymphatics and blood-vessels are liable to break out into proliferation after apparent dissolution by mercury, and a general infection may occur in this way after apparent latency or cure." Whitla recommends a mercurial course after iodides in tertiary syphilis. He is also in favour of Sir William Gowers'[15] plan of giving a course of 20 or 30 grains of **Iodide** for three weeks, twice a year for five years, after the disappearance of all symptoms.

W. Murray,[16] on the other hand, protests against the routine treatment of syphilis, and thinks that too long a course of either mercury or iodides does much harm by diminishing the stamina of the patient and lowering his power of resistance against the disease. In severe cases, or in people broken down in health, Murray recommends **Quinine,** which may be given with **Iodides** if necessary. This combi-

nation of iodides with quinine he regards as a "deadly foe to the mercurio-syphilitic diathesis." He gives 5 or 6 grains of quinine with 15 grains of iodide, three times a day. This combination tends to undo the bad effects of mercury. Murray thinks that much good may often be done after prolonged courses of mercury by *leaving off the specific treatment*, taking the patient to the country, and treating him with a **Nourishing Diet** and **Port Wine.** He concludes that "it is by a system of giving and withdrawing the specific medicines as the symptoms indicate, rather than by a steady and persistent use of them, that he eventually got the better of the disease." In other words, he is in favour of "symptomatic treatment."

The *choice of mercurial treatment* is well summed up by Fournier,[17] in a recent clinical lecture, as follows :—

A.—Ingestion by the Mouth.

Advantages.—Simplicity and ease of administration.

Disadvantages.—(1,) In some cases it causes gastric trouble and diarrhœa ; (2,) It is only tolerated in medium doses, large doses cause disturbance of digestion ; (3,) It is a remedy of only moderate activity and rapidity.

B.—Inunction.

Advantages.—(1,) Being an external remedy, it avoids digestive troubles ; (2,) For the same reason it leaves the digestive tract free for the internal administration of other drugs when required ; (3,) It is a remedy of great activity and rapidity.

Disadvantages.—(1,) It is a dirty method, and one tedious to the patient ; (2,) Owing to the stains on linen, it cannot be kept secret ; (3,) It is irregular—sometimes being well done, sometimes badly ; (4,) It causes stomatitis more than any other method.

C.—Hypodermic Injections, daily.

Advantages.—(1,) An active remedy, and one the activity of which can be regulated ; (2,) It avoids the digestive tract.

Disadvantages.—(1,) Pain, inflammation, abscess and induration. The chief of these is pain ; the others are avoided by antisepsis ; (2,) Inconvenience of daily treatment.

Injections at longer intervals.

Advantages.—Sometimes there is a surprising curative effect difficult to obtain otherwise, except by dangerously large doses of mercury.

Disadvantages.—Pain and inconvenience. The pain is worst in calomel injections, so much so that many have abandoned this form of medication.

INDICATIONS FOR TREATMENT.

A. Those concerning the patient himself.—(1.) In a young and vigorous subject with a good digestion, ingestion by the mouth is the best method, unless contra-indicated by other indications: (2.) In a dyspeptic subject with weak digestion, ingestion by the mouth is not good. Some other method should be used; (3,) Bad teeth and inflamed gums contra-indicate inunction, because it is the remedy most likely to cause stomatitis. In such cases, ingestion is the best method; (4,) Social convenience may modify the treatment. For instance, injections should not be given to people who have to be on their legs most of the day. Again, if the disease is to be kept secret, inunction is out of the question.

B. Indications depending on the quality of the symptoms.—Roughly speaking Fournier would recommend ingestion for cases of normal syphilis, inunction for severe cases, injection for the worst cases. An active method is necessary in all cases with grave symptoms, or in specially malignant types of syphilis. In all cases of iritis, tubercular syphilides, ulceration of the throat, leucoplakia of the tongue, etc., a rapid method is required, viz., inunction or injection. For iritis Fournier recommends injection. He recommends injections of calomel in ulcerating tubercular syphilides and gummata, in phagedænic chancre, in gummatous laryngitis, and in malignant types of syphilis.

C. Indications given by former treatment.—If the patient has benefited in former stages of the disease by a particular form of treatment, it is well to repeat this, unless contra-indicated in other ways.

D. Indications concerning the administration of other drugs.—If other drugs are to be given, such as iron or arsenic for anæmia, cod-liver oil, etc., use inunction or injection to avoid the digestive organs.

E. Indications for prolonged treatment.—The prolonged treatment necessary to combat the syphilitic diathesis is best done by ingestion, as it is the simplest and is tolerated by the stomach in small doses.

The empirical action of certain methods in certain cases.—Fournier draws attention to the well-known fact that a given manifestation of syphilis is more amenable to one kind of treatment than to another. For instance, it is common, after several years, for patients to suffer from erosion of the tongue, desquamation, glossitis, etc. These cases are very rebellious to ingestion or inunction, but clear up rapidly, according to Fournier, under calomel injections. Again, empiricism

shows us that inunction is better for hyperplastic glossitis, for old tubercular syphilides, tertiary visceral conditions, etc. Inunction is also better in pregnant women and infants. Other indications of empiricism are not yet known; for instance, we do not yet know the best treatment for cerebral, spinal, hepatic, renal and arterial syphilis. The comparative study of different forms of treatment and their special influence on the various lesions of syphilis is only in its infancy, and perhaps hitherto the treatment of syphilis has been too general.

Mercury.—Justus,[18] from careful investigation of three hundred cases, comes to the following conclusions:—

(1,) Syphilis untreated produces a diminution in hæmoglobin varying with the severity of the disease. This diminution is compensated by degrees as the symptoms of syphilis undergo spontaneous involution; (2.) The same diminution in hæmoglobin occurs after the administration of mercury, and is proportionate to the amount of mercury used. Inunction causes the same effect as injection. Ingestion by pills causes less effect owing to the smaller dose; (3,) The hæmoglobin is restored sooner or later according to the severity of the symptoms. It may again sink after repetition of the administration, but if treatment is continued, it ultimately reaches a higher level than before treatment was begun; (4,) When the hæmoglobin ceases to sink after repetition of mercury, the syphilitic symptoms remit; (5,) This sinking of the hæmoglobin after the administration of mercury is a specific phenomenon, and is not observed in the blood of healthy persons, nor in other diseases; (6,) This reaction is present in early secondary, and in all subsequent stages. It disappears when symptoms subside, but reappears at each relapse; (7,) Mercury circulates in the red corpuscles, and is only present in the serum when the corpuscles are saturated.

Kuperwasser[19] has investigated the changes in the white corpuscles produced by mercury in syphilitic and healthy blood. He states that in healthy persons the proportion of young leucocytes is considerably increased, and that of the old leucocytes considerably diminished, while in syphilitic patients there is a diminution in the young, and an increase in the old leucocytes. This reaction is independent of the stage of the disease, and occurs whether syphilitic symptoms are present at the time or not, and also whether mercury and iodides have been given previously. The only exception is in the case of patients who have undergone treatment by mercury within four months of applying the blood test. In such cases the reaction is that of healthy blood, possibly because the disease is so attenuated

that the blood gives a normal reaction. Kuperwasser regards this reaction of value in the diagnosis of syphilis in disputed cases, and in the cases called by Fournier "para-syphilitic."

Iodine.—At the Congress for Innere Medezin, in 1897, Blum showed that iodine formed with albumin a staple substitution compound. This was shown by the formation of an albuminous substance (iodo-albumin) in the thyroid gland after the administration of iodide of potassium. Zuelzer[20] repeated these experiments on dogs, and found iodide organic compounds in other parts of the body, but in smaller quantities than in the thyroid gland.

Potassium iodide easily yields its iodine when acted on by oxidising agents, and on the other hand, in the case of **Iodalbacid** (a stable combination of iodine with a proteid nucleus, containing 10 per cent. of iodine), much stronger oxidising agents are necessary to liberate free iodine. The living body has a sufficiently strong oxidising power for this purpose. This is shown by the quantitative excretion of iodine in the form of potassium iodide after the administration of iodalbacid, which can only be effected by oxidation and not by reduction. The relation between potassism iodide and iodalbacid is similar to that between glucose and starch; the latter never produces glycosuria, as it is only absorbed in proportion to its conversion into dextrose, no matter how large the dose. In the same way iodalbacid never produces so great an excess of iodine, liberated in the tissues of the body, as potassium iodide. Iodalbacid is also practically not eliminated by the kidney, and hence during its sojourn in the body not only is its action (in liberating iodine in the tissues) slower and steadier, but its excretion is slower. Hence its action is more protracted.

In numerous cases of syphilis in which potassium iodide produced slight or grave symptoms of iodine poisoning, the administration of iodalbacid was free from such effects. Again, most of the potassium iodide given in tertiary syphilis passed through the body too readily to affect the tissues.

According to this view, potassium iodide is indicated in cases in which the first rapid action of iodine is desired; for example, in severe tertiary eruptions. But in all cases where a prolonged iodine treatment is desired iodalbacid should be used.

Fifty cases of syphilis were treated in this way at the Dermatological Hospital, at Breslau, and in the private practice of Neisser. The results were good in all cases; 3 to 5 grains of iodalbacid in capsules were given daily.

Somatose.—Fournier[21] advocates the use of somatose in cases of

secondary syphilis accompanied by wasting or marked blood changes. Cases where there is diminution in hæmoglobin, vertigo, insomnia, and gastralgia, are suitable. Fournier showed a case at the Berlin Dermatological Society in which somatose succeeded when other remedies failed. The patient, a man aged forty, suffered from ulceration of the skin of the groins, œdema of the feet, epistaxis, which was complicated by mercurial stomatitis. For twenty days he was fed on soup and 4 teaspoonfuls of somatose per diem. Under this treatment the syphilitic symptoms abated, and the patient gained strength. The author considers it especially useful in mercurial stomatitis and in conditions of anæmia. The dose recommended is 12 grammes.

Intra-muscular Injections.—**Perchloride of Mercury.**—This method was first tried by Hebra in 1861, but has only of more recent years been widely taken up. Bloxam [22] first introduced it as a routine treatment in England. He used a solution of sal-alembroth : 10 minims of this solution (representing $\frac{1}{3}$ grain of salt) were injected every week into the gluteal muscles, changing sides alternately. This was continued till cutaneous signs disappeared, after which the injections were repeated every two weeks till all symptoms disappeared ; after this, injections were given once a month up to one or one and a half years. The whole amount of perchloride of mercury used was 8 to 10 grains. Lukasiewicz [23] reports the results of five hundred cases treated by this method. He uses a 5 per cent. solution of the perchloride, 1 c.cm. being injected into the gluteal muscles once a week. In all, three thousand injections were given, making an average of six for each patient. The cases included all stages of syphilis in both males and females, varying in age from sixteen to sixty-five years. No bad symptoms ensued in any case. He makes a point of giving the last injection after an interval of no treatment, as he considers that the body becomes inured to mercury in a short time, and the drug therefore has more effect after an interval of rest. According to the author, severe secondary lesions—including rupia, iritis, periostitis, choroido-retinitis, laryngitis, etc., all yield readily to this method. He also uses it in early tertiary conditions, and states that such cases benefit especially when no mercurial treatment has been previously given. He draws attention to the quicker action of this method compared with the injection of insoluble preparations, such as calomel and salicylate of mercury.

Calomel.—This was first used as an injection for syphilis by Scarenzio in 1864. The dose was a large one (6 grains). This caused an abscess, and most of the drug came away in the pus. Since then the treatment has been taken up by Julien and others, with doses of $\frac{3}{4}$ to

1½ grains, used with platinum-iridium needles. Asselbergs[24] considers this form of treatment indicated in: (1,) Certain mucous and cutaneous syphilides, erosion of the tongue, onychia, palmar and plantar psoriasis; (2,) Ulcerations in general, especially of the tongue; (3,) Visceral and cerebral syphilis. He does not recommend it as a general method, but considers it useful in the above-mentioned conditions; in cases which resist other forms of treatment, and in cases of dyspepsia. Julien, on the other hand, recommends its use in every indurated chancre.

Asselbergs quotes a case of Julien's, of severe ulceration of the nose and palate, which forty inunctions had failed to improve, cured by one injection of calomel. He, however, mentions that Fournier had several cases where four to ten injections of calomel did no good.

The advantages claimed are the same as for other methods of injection, viz., exact dosage, secrecy, and avoidance of digestive troubles. The great disadvantage is pain, which is often severe.

"Grey Oil."—Surgeon-Major Lambkin[25] has made extensive use of a modification of the "oleum cinereum," introduced by Lang, of Vienna, in 1888. Lambkin uses hydrarg. ʒj, lanolin ʒij (by weight), mixed with ol carbolic (1 in 20) ʒiv (by measure); 10 minims of this are used for each injection, and the injections are done once a week, in the gluteal muscles. Lambkin has done over six thousand injections with no bad effects. This method is advocated for the treatment of soldiers, especially in India, on the following grounds: (1,) By this method the soldier can be treated whilst out of hospital at his duty for that length of time necessary to cure the disease; (2,) The treatment is in the surgeon's own hands, and he sees that it is carried out; (3,) It is less liable to cause diarrhœa and indigestion; (4,) The State gains, because the time spent in hospital is diminished, while the chances of re-admissions are reduced.

Lambkin first used injections of perchloride of mercury, but gave it up owing to the pain caused by it. He prefers the "grey oil" to any other form of injection, but has also used sozoiodol of mercury (sodæ iod. grs. x, hydrarg. sozoiodol grs. v, aq. dest. ℥cc; ℥x to xx daily). This causes more pain, and does not seem to have such a good effect as the grey oil. He uses platinum-iridium needles one inch long. The average time of treatment was five months.

Salicylate of Mercury.—Hallopeau and Bureau[26] have used as an injection 4 parts of salicylate of mercury to 30 parts of oil of vaseline; ½ a cubic centimètre of this being injected into the buttock twice a week. Their conclusions are as follows: (1,) This is one of the best methods of giving mercury; (2,) The pain is well borne by most

patients; (3,) There was never any salivation; (4,) Suppuration is very rare; (5,) If, by chance, the injected material entered the general circulation, the symptoms of pulmonary embolism were not severe, and soon disappeared; (6,) These injections are not contra-indicated in syphilitic albuminuria: on the other hand, they often cured this condition; (7,) They do not consider relapses common after this treatment, since the salicylate is easily absorbed by the organism.

Intra-venous Injections.—**Cyanide of Mercury.**—At a meeting of the Soc. Franc. de Derm. et de Syph., April, 1897, Abadie[27] reported favourably on this method (introduced in 1893 by Bacelli), which he has used for several years. The advantages are, the absence of pain and induration which occur in intra-muscular injections. If ordinary antiseptic precautions are used, there is no danger. The only serious objection is the occasional difficulty in finding the vein. Even if the vein is missed, the only result is a subcutaneous swelling, which disappears in a few days. Abadie uses injections every other day, using a Pravaz syringe with a 1 per cent. solution of cyanide of mercury. In severe cases, such as iritis, the injections were given daily.

Ernest Lane[28] has tried this method in seventy-six cases, including primary, secondary, severe tertiary and relapsing cases in the male. He used a 1 per cent. solution of the cyanide of mercury, 20 minims being injected daily into the median basilic vein. The number of injections in each patient varied from four to forty-six. The results were as follows: sixteen cases improved, four refused treatment; in six cases the veins were not prominent enough for injection. The advantages claimed are rapidity of mercurialisation, exact dosage, painlessness, constant observation by the surgeon, and rapidity of action. A second series of Mr. Lane's cases was published by Mr. Chopping.[29]

Welander's Method with Mercurial Ointment.—Welander,[30] of Stockholm, is of opinion that during mercurial inunction the mercury is mostly absorbed by inhalation of the evaporated metal. He therefore has devised a bag of cotton cloth, fifteen by twenty inches in size, which is worn under the clothes and fixed by shoulder straps and a waist band; 6 grammes of **Mercurial Ointment** (half strength) are applied to the inner surface of the side of the case next the skin (inside the bag), and is renewed every day. Each bag is renewed every ten days, the patient washing the skin every day. The advantages are said to be: (1,) Avoidance of rubbing; (2,) Concealment of treatment; (3,) Absorption of mercury more quickly and with less irritation.

Treatment with Mercuriol.—**Mercuriol** is a new preparation of

mercury consisting of an amalgam of mercury with aluminium and magnesium, which contains 40 to 80 per cent. of metallic mercury reduced to very fine particles. It does not form lumps like other external preparations of mercury.

Ahman[31] has used mercuriol in thirty cases of syphilis, with good results. Mercury was found in the urine in all cases. The method used was that of Welander, described above. The mercuriol under the influence of warmth and moisture decomposes ; the aluminium and magnesium are oxidised, and the mercury set free. This is said to be vapourised and inhaled by the lungs.

Serum.—Tarnowski[32] has experimented on the serum therapy of syphilis in the following way : Repeated inoculations on a horse were made with the secretion of primary sores and mucous tubercles, and the introduction under the skin of pieces of mucous patches and primary sores. No symptoms were produced in the horse, but the autopsy revealed, in the lymphatic glands, liver, heart and aorta, lesions corresponding to those of syphilis in the condylomatous stage. Horses are therefore, according to Tarnowski, capable of inoculation with syphilis and the serum taken from them was used on six syphilitic subjects with the following results : The serum did not influence the development of the primary sore or the appearance of the secondary phenomena. In the tertiary stage there was also no reaction to the serum. In other words, the course of the disease was unaltered. Tarnowski infers from this result that the efficacy of anti-toxin does not depend on the destruction or neutralisation of the toxins, but on increasing the resisting power of the patient. Mercurial treatment also does not act on the toxin, but increases the resisting power of the blood. He thinks it possible that the serum of animals, having a certain receptivity for syphilis, if introduced as a vehicle for the administration of anti-syphilitic remedies, may produce favourable results by increasing the immunity of the blood. With this view, Tarnowski mercurialised healthy horses by repeated intra-muscular injections of calomel, and used the serum from the mercurialised animals. Sixteen soldiers were treated at different stages of the disease by gluteal injections of 10 to 20 cubic centimètres of serum, the average number of injections being sixteen. The result was *nil* as regards the progress of the disease. On the other hand, the patients suffered from malaise, anæmia, pyrexia and albuminuria. Tarnowski concludes that so far such treatment is a failure.

Experiments of a similar nature were conducted by Domenico Majocci,[33] at Bologna, last year. They were made with the serum of animals syphilised by inoculation with syphilitic products derived

from syphilitic patients. The animals used were a ewe and a ram, and these were inoculated with the blood of patients with recent secondary syphilis: 2 c.cm. of blood from the cephalic vein were injected into the right jugular vein of the ewe; 60 grammes of blood from a different patient, after being mixed with oxalate of soda to prevent coagulation, were sterilised and injected into the jugular vein of the ram on four successive days. From the blood of the two animals inoculated serum was separated and used for the treatment of three cases of syphilis (primary, secondary, and tertiary).

CASE 1. *Secondary Syphilis.*—The patient was the same from whom the second animal had been inoculated. Ten injections with the ewe's serum were made within seventeen days. After the third injection the skin eruption began to fade, but increased later on. Subsequently the patient was treated with mercury. The serum treatment in this case was a failure.

CASE 2. *Primary Syphilis.*—Sixteen injections with ewe's serum were made within thirty-nine days, followed by thirty-four injections of ram's serum, extending over eighty-two days. These injections did not prevent the appearance of a roseola, and afterwards a papular syphilide. These symptoms disappeared after the forty-seventh injection, and the patient was free from symptoms six months afterwards.

CASE 3. *Tertiary Syphilis.*—Twenty injections of ram's serum were made in forty-two days. Considerable improvement took place, and was maintained eight months after treatment. The author does not regard his experiments as conclusive, but thinks that future research on the same lines may lead to some result.

Direct Treatment with Serum of Syphilitic Patients.—Vyeviorovski[34] has experimented with serum obtained from patients after the disappearance of the secondary signs, and serum from patients with tertiary syphilis. He regards the bleeding of patients with late manifestations of syphilis as harmless. He takes 1½ grains of blood for each pound weight. Serum obtained in this way caused an increase in the percentage of hæmoglobin, in the number of the red corpuscles, and in the metamorphosis of the white corpuscles. These changes take place in the blood before any corresponding changes in the external signs. Only the serum of syphilitic patients causes these changes in the blood of syphilitics; blood from healthy people has no influence on the blood of syphilitics. The action is also independent of treatment; untreated syphilitic patients' serum has the same effect. The action of the serum is stronger when administered in the early secondary stage. In eight cases out of sixteen, the signs entirely

disappeared from the use of serum alone. A case is cited where the administration of serum three weeks after the appearance of a chancre and adenitis, prevented the appearance of secondary symptoms, while in three other cases, when the serum was given later, secondary symptoms were not prevented. The author thinks that the serum treatment compares favourably with mercury.

[These results, if confirmed, appear to be the best yet published. However, with regard to the case where secondary syphilis is claimed to have been prevented, we must draw attention to the fact that it was not proved to be a case of syphilis. Syphilis cannot be diagnosed with certainty till secondary signs appear.--C. F. M.].

Balneotherapeutics.—Neisser[35] thinks that **Baths** have no specific action on the disease, but that a course of baths is useful, in that it takes the patient away from the ordinary habits and irregularities of daily life, thereby enabling him to obtain more regular treatment. The effect of baths is somewhat antagonistic to mercurial treatment by inunction, since some mercury is washed off the skin which would otherwise be absorbed. This is, however, avoided by allowing an interval of two or three hours between inunction and the bath.

PREVENTIVE TREATMENT.—Fournier[3] discusses the question whether, the father being in a stage of transmissible syphilis, and the mother being healthy, anything can be done to save the child from hereditary syphilis. Two classes of cases are considered: (1.) A first pregnancy soon after marriage; (2,) Several previous pregnancies resulting in abortion or early death of the child. Fournier is of opinion that the child can be protected by anti-syphilitic treatment of the mother, even when she is healthy, and that such treatment is free from danger to the mother. In support of this treatment, he quotes Porak's experiments, which showed that the fœtus *in utero* is affected through the placenta by drugs administered to the mother. Iodide of potassium administered to the mother was found by Porak in the urine of the fœtus forty minutes afterwards. Fournier does not claim that this treatment will always save the child from syphilis, or prevent abortion, but considers that it is a preventive to the child against syphilis in the majority of cases in both the classes of cases mentioned above. He advises all such cases to be treated, because good may ensue, and no harm results. The treatment should be begun soon after the beginning of pregnancy, and with mercury or mercury combined with iodides. Small doses are advised, to be continued throughout pregnancy.

Wet-nurse and Child of Syphilitic Father.—The important question regarding the conditions under which we can allow or refuse a wet-

nurse to the child of a syphilitic father, are discussed by Fournier.[37] After pointing out the consequences that may ensue to the medical man, if the wet-nurse contracts syphilis from a child after he has given his consent, and that she may transmit the disease to her own husband and children—consequences that may result in an action for damages and serious loss of reputation Fournier says we have five questions to consider :—

(1,) *The absence of actual syphilitic lesions.*—If actual lesions are present in the father, the infant may be infected, or is at least dangerous to the nurse.

(2,) *The age of paternal disease.*—In the course of time there is a progressive diminution in the hereditary taint. The syphilitic poison begins by killing the offspring in the early months of pregnancy (abortion) ; then in the later months; then they are born at term, but syphilitic and likely to die; later they are born healthy, but capable of resisting the poison; finally, further pregnancies give birth to infants free from syphilis.

(3,) *The quality of the paternal disease.*—Mild or severe.

(4,) *The lapse of time since the last sign of syphilis in the father to the time of conception.*—An infant conceived at or about the time of syphilitic signs in the father is generally menaced, while when conceived long after the last manifestations, it usually escapes.

(5,) *The treatment received by the father.*—The infant is likely to escape if the father has been well treated for a long time. Insufficient treatment of the father causes danger to the infant. In deciding on a nurse, the most important considerations are the duration of the disease in the father und the treatment he has received. Some cases are difficult to decide. If the father has been quiescent from syphilis eight or nine years, and was treated well, we can give the child to a wet-nurse; if the disease was contracted one or two years ago, and not well treated, we must refuse a wet-nurse. Doubtful cases are those where the disease was contracted say three years ago, and was of medium severity, the treatment being good at first but afterwards neglected. In such cases it is best to forbid a nurse, as the condition of the child is uncertain.

PROGNOSIS.—This subject is discussed by J. N. Hyde,[38] who sums up as follows :—

(1,) *Inherited Syphilis* is very fatal, and apart from abortion and miscarriage, nearly 90 per cent. of children die.

(2,) *Acquired Infantile Syphilis* is rare, and probably most cases survive.

(3,) *Acquired Syphilis in Adults.*—Between 80 and 90 per cent. of

cases escape tertiary symptoms. The percentage of death in patients affected with gummata is probably not more than 2.

(4.) The *expectancy of life* is probably not affected by the coincidence of syphilis with other diseases. The natural evolution of the disease in untreated cases is not in the direction of a fatal issue, but rather tends to physical degeneration and complications due to involvement of the nervous system and the bones without affecting the organs essential to life. It is unfair to charge an extra risk for the insurance of syphilitic applicants, otherwise in sound health. The applicant should be examined with a view, not so much as to his syphilitic history as to his condition with relation to all the other items making up a satisfactory risk. In other words, if he has a good family history, a sound constitution, good habits, and has reached but not passed, a satisfactory age, his expectancy of life is probably the same as other persons in similar condition, without added risk on account of syphilis.

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TABES DORSALIS. *Græme M. Hammond, M.D., New York.*

Even the most careful observers are by no means of one mind in regard to the etiology and treatment of this disease. Even the question as to whether it should be regarded as a spinal cord disease,

or whether the cord lesion should not be considered merely as a factor of a general disease of the cerebro-spinal system, has not been definitely determined. On one point, however, there seems to be little or no disagreement, and that is on the almost invariable syphilitic etiology. It is in the manner in which syphilis produces its destructive changes, and the nervous elements which are primarily attacked, that the divergence in opinion is most noticeable.

Prince,[1] in a study of one hundred and ninety-four cases, considers the sclerosis in the cord due to anæmia consequent upon endarteritis. This for years has been a favourite theory, and is approved quite recently by Adamkiewicz.[2] Dana,[3] on the other hand, voices the opinion held by many that the initial lesion of tabes occurs in the posterior ganglia; that it is a degenerative disease of the neuron induced by the direct action of some substance derived from syphilitic infection. The writer is inclined to accept both these theories, with the amendment that vascular disease of the vessels supplying the posterior ganglia may also cause degeneration of the sensory neurons. If these views can be accepted, it may readily be seen that the initial lesion in all cases of tabes need not be identical.

In regard to the treatment of tabes by antisyphilitic remedies, there is again an opposition of opinion. Dana believes **Mercury** and **Iodide** act beneficially in cases of undoubted syphilitic origin. Sachs coincides with this view, while Collins, on the other hand, not only denies that the administration of antisyphilitic remedies is ever followed by improvement in the symptoms, but even claims that positive harm frequently follows their use.

In the writer's experience, antisyphilitic treatment is most serviceable in early tabes, not that it restores degenerated nervous tissues, but that it tends to prevent subsequent degeneration in the sensory neurons and elsewhere in the cerebro-spinal system. Fraenkel's method of teaching tabetics to regain co-ordinated movements by systematic exercises is gaining many converts. In America it has not been followed to as full an extent as it should; hence few observers are prepared to endorse it to the same degree as our European confréres, who report many cases unquestionably benefited by this method. It would take more space than the writer feels disposed to grant, for a full description of Fraenkel's method. In a recent volume by Goldscheider, the subject is considered exhaustively.

Rest is considered as an important measure in the treatment of tabes, and is generally insisted upon by most writers; confinement to bed is certainly advisable in advanced tabes, but in the early stages of

the disease, the writer is of the opinion that moderate exercise is often much more beneficial than absolute rest.

Basch, in a most excellent article on the gastric crises of tabes, gives the following directions for the treatment of that distressing condition. During the attacks, it must be our aim to give the patients relief from their great suffering, and in the protracted cases to provide for sufficient nutrition. The one sovereign remedy which answers the first of these indications is hypodermic injections of **Morphine.** But they also have the great disadvantage, especially in chronic cases, of inducing morphinism and of necessitating ever-increasing doses. As substitutes for this he recommends **Oxalate of Cerium,** in doses of 1½ grains every two to four hours, according to the severity of the symptoms and the effect obtained. The remedy was continued between the attacks in doses of from 1 grain to 1½ grains three times a day; **Antipyrine** in doses of 4 grains repeated hourly. If the desired effect was not obtained in four hours, the dose was increased to from 7½ grains to 15 grains, the effect upon the heart being carefully observed; **Nitrate of Strychnine,** given in doses of $\frac{1}{30}$ of a grain subcutaneously.

The second indication, that is, providing for sufficient nourishment during an attack, may become a very earnest question. While the symptoms are very acute, it is best to restrict the patients to fluid diet, beginning with teaspoonful doses half hourly or hourly. The indication for the fluid diet is a threefold one—to relieve nausea and pain, to quench the intense thirst, and to give nutrition. The author recommends black coffee, tea, cognac, champagne, lemonade, milk, koumiss, and matzoon. A few drops of cocaine solution placed upon the tongue frequently relieves thirst and vomiting, so may also a drop of tincture of iodine in a teaspoonful of water, repeated hourly.

When pain is a distressing symptom, it is best to give the fluids hot rather than cold. In very prolonged and severe cases, success will hardly be secured without resorting to rectal alimentation. The author utters a timely warning against allowing patients to over-eat during convalescence.

REFERENCES.—[1] "Therap. Gaz.," Oct. 15, 1898; [2] "Med. Rec.," Oct. 7, 1899; [3] Ibid., Oct. 28, 1899.

TEETH (Care of in the Young). *J. G. Turner, F.R.C.S., L.D.S.*

A great deal has been heard lately of the importance of the care of the teeth of the young, and of the condition of the teeth of school children. A special committee of the British Dental Association, after some years' careful investigation, has presented a series of reports showing the deplorable condition of the teeth of school children, and

calling attention to the far-reaching effects of the evil. (*Vide* reprint of seven reports of the committee appointed by the Representative Board of the B.D.A., to conduct the collective investigation as to the condition of the teeth of school children.)

The general practitioner has it in his hands to combat this condition of things to a great extent, especially in the way of prevention. The following considerations will indicate the lines of practice in this respect :—

(1,) The substance of teeth, enamel and dentine, once laid down is permanent and cannot be renewed, or influenced in nutrition as can soft tissues; hence portions laid down during a period of local or general ill-health remain permanently ill-formed and weak in resisting power.

(2,) The blood-supply of the dentine-forming organ (tooth-pulp) is a terminal anastomosis: and the same is true of the blood-supply of the enamel organ, the adamantoblasts being under the further disadvantage of deriving their blood supply by osmosis from a considerable distance. (The enamel organ is supplied with nourishment from vessels in papillæ of mesoblastic tissue, which dip into the outer part of the enamel organ in the manner of one side of a simple placenta.) Hence during any period of depression these tissues will be starved by failure of the blood-supply to reach the terminal points in due amount, and will be laid down at least deficient in quality, and perhaps in amount.

(3,) The germs of all the temporary teeth, and of most of the permanent teeth (all except the last two molars) appear during intra-uterine life; and calcification is well advanced at birth in the temporary series, and begins shortly after birth in most of the permanent series.

(4,) Decay (dental caries) is a process dependent at its inception on the *environment* of the teeth; beginning from the *outside*, and being started by the acid bacterial fermentation of *débris*, food, shed epithelium, dried mucus, etc., lodged between the teeth, or in the fissures of the crowns. By this the enamel is first penetrated, and a way opened to the softer and more organic dentine, where the process spreads rapidly.

(5,) The teeth, being so largely composed of inorganic salts, especially of calcium, will naturally require a due proportion of 'salts' in the food offered them.

Evidently, the care of the teeth, and especially of the first series, begins before birth. The mother must conform to those rules of life which best suit her general health, and though it may be accepted

generally that there is a sufficiency of lime salts in an ordinary good mixed diet, still no harm will be done by substituting some bread from which the more mineralised portions have not been removed in the effort to get a good colour, if digested.

The general care of the infant begins at birth with its feeding, and the rules laid down by authorities on children's diseases as best suited for general development apply equally to the teeth. With these the general practitioner will be more conversant than the writer.

The *local* preventive measures refer to: (1.) Cleanliness; (2.) Prevention of overcrowding.

1. In the prevention of decay **Cleanliness** is the all-important factor. The child should early be given a small tooth-brush and a cake of *any good soap*, and taught to brush the teeth with soap and water, inside and outside, well down to the necks, and on the crowns, night and morning, but especially *at night after the last meal;* and after washing the mouth clear of soap should be taught to rinse it well round with a **Solution of Sod. Bicarb.** gr. x to ℥j of water. After the last washing at night *nothing more must be allowed to be taken*—no sweets, biscuits, milk, etc., for it is to clear the mouth of *débris* which would otherwise remain all night to decompose, that this final washing is insisted on. Soap is recommended because it best clears away the greasy, whitish rim, consisting of *débris* and bacteria, which so soon collects around the necks of the teeth.

If possible, the child can also be taught to pass a strand of floss silk between its teeth, all the way round, to dislodge *débris* from between the teeth.

Many parents are much alarmed at the appearance of a little blood at the time of brushing, and stop the cleansing because the gums are "too tender," or "bleed so readily." In nine cases out of ten the gums are chronically inflamed owing to the permanent presence of the rim of *débris* above referred to, and brushing is the only way of getting rid of this. The amount of blood lost is generally almost infinitesimal.

As a further precaution against decay periodic visits (every six months) to a dentist should be recommended; for if, as a result of bad hygiene during the developmental period, deep cracks or fissures of the enamel (such are frequently to be demonstrated on section) are present, decay is very likely to get a foothold then, in spite of careful cleaning.

In considering cleanliness as a factor in the prevention of caries, *nasal obstruction*, so important a factor in overcrowding, must be remembered. A child constantly breathing through its mouth

accumulates round the necks of its teeth sordes consisting chiefly of dried mucus, difficult to keep from accumulating, and providing for its own renewal by leading to chronic inflammation of the adjacent gums. In this nidus germs flourish, and caries soon supervenes.

(2,) Overcrowding favours decay by giving rise to interstices difficult of access by cleaning processes, and hence giving easy lodgement to decomposing *débris*—it is really the dirt question again—and, though affecting chiefly the teeth of succession, is referred to here, as the chief cause of this overcrowding is under-development of the maxilla dependent on obstructed nasal breathing, a condition itself chiefly dependent on adenoids, a disease of the *young* the importance of which in producing facial deformities is now well recognised. The practitioner must see that every obstruction to nasal breathing, adenoids, or obstruction in the nares proper, is removed, or stunted growth of the maxilla, followed by dental overcrowding, must result.

If, however, caries is already present when the patient is first seen, even if only the temporary teeth are involved, a visit to a dentist should be urged. The temporary molars have to serve the child up to the age of ten or twelve, during a period of very active growth, and the process of drilling out and filling temporary teeth is by no means so painful as parents ordinarily suppose.

The practitioner must remember that the first permanent molar, erupting at five-and-a-half years, is commonly regarded by parents as a temporary tooth, and allowed to decay along with these by people who are unwilling to expend money on teeth which are going to be replaced. But if it is pointed out that this is a permanent tooth, these people will often be found willing to have them attended to.

It should be remembered that though the differences in size and position between temporary and permanent molars render it easy in most cases to say which is a temporary and which a permanent tooth, this is not always so. The first permanent molar may be quite small, while the temporary molars are large (there is no necessary correlation between the size of the teeth of the first and second sets). In the lower jaw the five cusps of the second temporary molar may be so arranged as to simulate a permanent molar, the fifth cusp being placed between the distal pair of cusps instead of labially; in the upper the crown of the first temporary molar may resemble that of a bicuspid, and that of the second may be an exact facsimile of the first permanent molar; while as a result of extraction of temporary molars, the permanent molar may have so far moved forward as to occupy in great part the position of the second temporary molar; or, as a result of decay, the grinding surfaces may have been so far

destroyed as to obliterate all traces of cusps. In such cases the diagnosis between temporary and permanent molars, and sometimes between the temporary molar and the succeeding bicuspid, is often rendered difficult: and the same difficulty is sometimes seen where the temporary canine is retained beyond its proper time. (In such cases a skiagraph will readily show presence or absence of a permanent tooth within the jaw.)

The best way of ascertaining whether the tooth be temporary or permanent is to run a fine pointed instrument, a piece of finely pointed and tempered steel wire, vertically up and down at the gum edge. The enamel of a temporary tooth ends in a ridge, over which the probe can be felt to move, while the enamel of a permanent tooth shades off imperceptibly on to the cementum of the root. This is true of all members of both series, but the ridge on the temporary teeth is better marked in the molars.

It is often urged that since caries of the first permanent molar is so common, and since overcrowding is such a likely eventuality, the best course to pursue is to extract this tooth, even though but slightly or not at all decayed, thus obviating much distress to the child in filling, and providing beforehand against overcrowding. With this view the writer entirely disagrees. On the second point—if the first permanent molar is extracted early, before the eruption of the second permanent molar, the space thus made will be occupied, not by the bicuspids when they erupt falling backwards, but by the second molar travelling forwards, and overcrowding, which affects chiefly the teeth of succession, that is, the permanent teeth as far back as and including the second bicuspid, will be in no wise bettered. To be of service the extraction must be done at the right time, that is, when the second molar is well set in its place, or when the bicuspids are so far erupted that they can be quickly pulled back by a suitable regulating plate into the space made for them.

On the first point—that the tooth usually decays, and hence must be got rid of eventually (it is often added that it is a "soft" tooth). If care is taken of the mouth the tooth need not decay at all, and as far as softness is concerned, the dentine of teeth hardens slowly after eruption, and hence at the period when the bicuspids are erupting it is the hardest tooth in the mouth, and, *de facto*, least liable to decay.

This point is criticised by Black,[1] who says that the substance of teeth is of the same hardness at all periods, containing the same percentage of inorganic salts, and that decay depends *entirely* on environment. (This last is not accepted by the writer.) However this may be, teeth are erupted in an unfinished state, and after eruption

there is a concentric reduction of the size of the tooth-pulp by deposition of dentine, and elongation of the roots by calcification of the still forming dentine organ of the apical part. Hence, at the age of say eleven years, the first permanent molar is an easier tooth to stop effectively, having greater thickness of dentine round its pulp, both absolutely and relatively to bulk; and is probably less sensitive than the bicuspids, which are the alternative teeth for sacrifice, and for this reason, too, better for filling.

The first molars, moreover, are the largest teeth the individual will ever have, and occupy a place in the alveolar arch which makes them important in maintaining the contour of the face.

From all this it will be seen that the writer recommends persistent attention to preserve the first permanent molars, and in case of need from overcrowding, extraction of bicuspids to give the needed room. The writer has had to extract *all* the bicuspids to remedy crowding, but has had as the result a full arch of teeth in which the first molar touches the canine on both sides.

But the practitioner may have to decide and act for himself. In such a case *it is better to sacrifice every temporary tooth, and the first permanent molars, than to leave the child with painful or foul teeth in its mouth.* A child with tender teeth will never masticate its food properly, nor clean its teeth. If, besides, there are chronic discharging abscesses (gumboils) in connection with dead teeth, and the teeth are broken down and hollow, affording lodgement for decomposing *débris*, the child is constantly swallowing pus and putrid matter, as well as a large quantity of unhealthy mucus secreted by the chronically inflamed oral cavity. Under such conditions the child quickly develops indigestion, and nutrition failing, becomes stunted in growth. Obviously the child is then more prone to any disorder, needing the soil offered by generally diminished resistance; and septic endocarditis may be mentioned as a disease which may find entrance through ulcerated gums in these cases.

Hence, despite the obvious value to the individual of a set of good molars, the writer urges the extraction of all teeth which cannot be rendered painless and aseptic—of all teeth with "gumboils," of all teeth that are permanently painful, or are so broken down, hollow and irregular that they cannot be kept clean. (This last, failing filling.)

If a child presents itself with a tooth aching from an exposed nerve, to be known generally by pain on taking hot or cold water, or sugar or salt, and by the absence of tenderness of the gums, or on pressing the tooth down into its socket (no pressure being made directly into the cavity), an attempt may be made to relieve the child of pain by

gently syringing the cavity out with warm water and applying to the cavity, without pressure, **Pure Carbolic Acid** on a small pledget of cotton-wool. This should be renewed till non-recurrence of the pain tells of the death of the pulp. Thereafter, any fresh pain means septic absorption from the dead pulp through the apex, and the tooth must come out.

Every tooth permanently interfering with mastication or cleanliness must be taken out. Further disabilities entailed by the presence of these dead teeth are: (1,) If accompanied by suppuration, the inflammation may spread to the enamel organ of the tooth of succession, and injure the forming enamel; (2,) Roots of the dead temporary teeth are far less easily absorbed than those of living, and hence stand in the way of the erupting teeth, which are deflected from their proper course, leading to irregularity often difficult to set right. As against all this, on the extraction of a tooth, *e.g.*, first temporary molar there is a tendency for the teeth behind to travel forward and occupy space which should be preserved for the tooth of succession, which will appear crowded on eruption, and there is the fact of loss of masticating teeth.

Fear of such overcrowding can have no weight against the evils of retaining the tooth; a dentist will remedy it with the help of patience on the part of parents and patient. In connection with the second point the writer recalls the case of a girl who since the age of six-and-a-half has had no masticating teeth at all, and yet is now, at the age of eleven, a perfectly healthy and well-grown child—a result attributable to the mother's care in feeding her on soft foods for the first year or more, and to the fact that the gums became in time hard enough for the child to eat any ordinary food.

REFERENCE.—[1] "The Dental Cosmos," 1895.

TESTES (Tuberculosis of). *Priestley Leech, M.D., F.R.C.S.*

A discussion on the treatment of this subject took place at the Société de Chirurgie.[1] Opinions were somewhat divided. Reclus only removes the testicle when suppuration occurs in its body; if there is pus in the epididymis he removes this, leaving the testicle; if a small abscess develops he leaves it alone. Quènu and Lucas-Championière were in favour of conservative measures. Reynier says it is not a benign disease, and recommends total castration as the safest method. Berger says castration may be required either to remove an isolated focus of tubercle or at a later stage to rid the patient of a source of profuse suppuration. Removal in an early stage is not always successful, and should be accompanied by excision of the whole of the

vas deferens of the same side. Castration for tuberculous disease of the genital apparatus ought never to be performed on both sides. The vesiculæ seminales may be removed either from the groin or from the perineum. That the latter is the better route, as the subperitoneal route is by no means easy.

A leader in the "Therapeutic Gazette"[2] contains the following statements :—

"The etiology, pathology, prognosis and treatment of this affection still remain to be settled, and certainly the experience of every surgeon is to the effect that the disease is usually well advanced before special treatment is sought.

"The means by which the tubercular infection reaches the testicle are those by which the bacilli are carried to any part of the body. From the mass of clinical evidence it seems clear that this infection is usually a descending one from the prostate, that tubercular epididymitis and orchitis are commonly complicated by latent or active prostatitis—often by infection of the bladder and kidneys, sometimes by tubercular lesion in remote parts of the body—and that in a fair proportion of cases the affection is an absolutely local one, the other organs being healthy. It may develop at any age, records having been published of infants and octogenarians being afflicted with the disease, but it is commonest at the period of lustiest life, *i.e.*, early manhood.

"The normal testicle has toward the tubercle bacillus marked resistant powers, if Jack's observations can be trusted. These are to the effect that a tuberculous patient may secrete through a healthy testicle semen containing virulent tubercle bacilli. The favouring condition for the lodgment and growth of these bacilli is lessened resistance usually incident to gonorrhœal inflammation, trauma or physiological congestion. The last is a factor of very great importance. The affection is commonly bilateral (75 per cent.), but rarely so synchronously. The disease may remain in one testis or epididymis for weeks or months before the other becomes affected. Under such circumstances it is possible that the prostatic affection may be secondary to that of the testicle, but more probable that it was primary. The onset of the disease is sometimes as sudden and violent as is that of a gonorrhœal epididymitis. The partial subsidence is rapid in these cases. As a rule the onset is insidious, and with inflammatory symptoms or only slight ones ; nodulations form in the epididymis, often about its upper portion first, but frequently in exactly the position characteristic of the induration following gonorrhœal inflammation. Preceding or accompanying these insidious cases there is often

observed a slight intermittent gleety discharge, some frequency in urination, blood at the end of micturition, pus in the urine. A rectal examination will often show nodulation of the seminal vesicle or the prostate of the affected side. This slight gleet leads to error in diagnosis, the physician taking it for granted that a urethral discharge is necessarily of venereal origin.

"The nodulation in the epididymis may be the only sign of the affection, the genito-urinary tract remaining clean and the urine showing nothing abnormal on repeated examination. This is not commonly a reason for the conflicting views expressed as to the treatment appropriate to tuberculosis of the testis, and is to be found in the fact that the disease exhibits a marked tendency to remain localised for a long period. There are many spontaneous cures reported. Tubercular involvement of any portion of the genito-urinary tract is commonly slow in its development. If the affection were invariably rapid, progressive, and as a rule became disseminated, the advisability of early extirpation would so generally be recognised that but few words would have to be said as to treatment. As it is, the majority of surgeons advocate immediate partial or complete castration as soon as the diagnosis of tuberculosis of the testicle is clearly established. Theoretically, this seems objectionable, because of the apparently well-established fact that the involvement of the testicle is generally secondary to foci of disease in the prostate, and that unless a vasectomy and prostatectomy are performed in addition to removing the testis, the patient is not likely ultimately to be benefited. As a matter of clinical experience, however, it has been shown repeatedly that after removal of a diseased testis and cord, the infiltration distinctly perceptible on rectal palpation has subsided, and a permanent cure has been accomplished. R. Koenig reports many such cases.

"The statistics of tubercular epididymitis and orchitis treated by non-operative means, remains to be taken, but it is noteworthy that a surgeon as experienced and modern as Guyon counsels many of his patients to adopt those *hygienic and climatic measures* which have yielded such good results in pulmonary consumption, and which have given him a large percentage of apparent cures.

"The advantages proven for operation are: That it at once removes a focus of infection, and of possible dissemination, and this by a simple and safe procedure; that it removes an organ the physiological activity of which is already destroyed; that it exerts a distinctly modifying effect upon tuberculous infection of the prostate and tubercular cystitis; that in distinctly localised cases it is

absolutely curative. All these advantages seem to be shared by thorough removal of the tuberculous foci, leaving as much of the testicle as seems healthy. When the disease is bilateral, this procedure would seem practically to be indicated, because of the systemic influence of testicular tissues, and because of the excellent results following it. The method is one which is steadily growing in favour.

"When a tuberculous testis first comes under observation, the first thought *should not be to suggest operation.* The effect of *pressure*, *elevation*, and *moist heat* should first be tried. This is best applied by a shallow suspensory bandage made of mackintosh and gored at the sides and provided with lacing. The testicles are covered in by a layer of absorbent cotton, the suspensory is applied, drawn well up by the perineal shape, and finally laced at the sides. The patient should at the same time be placed under the most favourable hygienic conditions. If the disease is progressive, the infiltrated foci should be removed by the curette or knife; if the major part of the anterior testes is involved, complete castration is indicated, even though there be evidences of prostatic, vesical or renal involvement. It is worthy of note that even patients presenting all the cardinal symptoms of renal tuberculosis may recover."

REFERENCES.—[1] "Rev. de chir.," Feb. and May, 1899, and "Bull. et mém. de la Soc. de Chir.," No. 14, 1899; and see also "Rev. méd. de la Suisse Rom.," April 20, 1899; [2] "Therap. Gaz.," Aug. 15, 1898.

TETANUS. *Priestley Leech, M.D., F.R.C.S.*

Intra-cerebral Injections of Antitoxin.—This treatment has been tried because of the doubt about the efficacy of the hypodermic and intravenous injections of tetanus antitoxin. Several cases have been reported, and the injection has been made into the frontal lobes. Semple[1] suggests the following method: An imaginary line is drawn from one auditory meatus to the other, and from the centre of this line another is drawn to the outer angle of the orbit. The middle of this latter line is the spot where the injection should be made. The skull is trephined, or an opening made by a drill, sufficiently large to admit the nozzle of a syringe. The serum is concentrated, and the injection is made slowly.

Carless[2] has found that out of twenty-five patients treated in this manner eleven recovered and fourteen died.

Gibb,[3] of Paisley, reported a severe case where the incubation period was seventeen days; 71 c.c. were injected into the brain, and 104 c.c. hypodermically. The patient recovered, but died eight weeks after the last intracerebral injection,[4] and the results of the *post-mortem*

leave but little doubt that the fatal issue was directly due to the particular method of injection employed. There were found abscess cavities in the frontal lobes on each side; that on the left side was the size of a hen's egg, and contained two ounces of thick pus and communicated with the left lateral ventricle into which the pus had passed, and it also communicated through the great transverse fissure with the cerebellar fossæ. The abscess cavity on the right side was smaller and less congested, and contained about an ounce of pus. Bacteriological examination and cultivations showed the presence of cocci possessing the characteristic appearances of staphylococcus pyogenes aureus. Gibb thinks it difficult to believe that sepsis was introduced with the serum, as every precaution was taken. Damage to the brain from repeated injections would predispose to it.

REFERENCES.—[1] "Brit. Med. Journ.," Jan. 7, 1899; [2] "Pract.," July, 1899, p. 80; [3] "Brit. Med. Journ.," April 15, 1899, p. 895; [4] Ibid., July 1, 1899, p. 9; see also "Ann. of Surg.," April, 1899, p. 516, and "Beiträge z. klin. Chir.," Band. xxiv, Heft. 2.

THRUSH OF THE BLADDER. (See "Bladder.")

THYROID (Diseases of). (See "Goitre.")

TICK FEVER (in Australia). *G Lane Mullins, M.A., M.D. Sydney.*

Frank Tidswell has been experimenting in Sydney upon the effect on cattle, and on meat and milk, of protective inoculation against tick fever. He is of opinion that, although the inoculation rendered the meat of the animal pale, flabby and soft, there was no sign of disease produced, and these ill effects were only temporary. The meat is less nutritious, but is not unfit for food. There is no likelihood of the disease being communicated to man by ingestion of the micro-organisms, nor in any other way. The yield of milk among inoculated dairy cows is slightly diminished for some weeks after inoculation.

REFERENCE.—"Protective Inoculation against Tick Fever," Sydney, 1899.

TINEA TRICHOPHYTINA (Ringworm). *T. Colcott Fox, M.B.*

Dr. Charles J. White,[1] of Boston, U.S.A., has published the results of his studies pursued from October, 1895, to July, 1898. The investigation was clinical, microscopical, and cultural, carried out on nearly three hundred cases. Allowing for some differences in detail, which Dr. White attributes chiefly to variation in the fungus, the similarity of results in Paris, London, and Boston, is strikingly alike. In Boston, probably about 52 per cent. of ringworms are due to the microsporon Audouini. It was found attacking the beard in one case—a very rare occurrence. It was isolated also from the dog and the cat.

The megalospora are responsible for about 47 per cent. of all cases of ringworm, but they rarely attack the scalp in Boston (6 per cent. of all cases, and a little more than 3 per cent. of all ringworm of the scalp). The megalosporon ectothrix was found fifty-six times, once in a boy's scalp, and in fifty-five cases in the bearded face.

Dr. White thinks the microsporon Audouini comparatively benign in Boston. At any rate, it appears to be more easily cured at the Massachusetts General Hospital than in Paris or London. The directions given are to wash the whole head of the child every morning with Castile soap and warm water; to remove all short hairs visible in or near the bald area; and to gently rub in the following ointment on and around the diseased area :—

℞ Sulph. Flor.	ʒj	Naphthol	ʒss
Acid. Carbol.	ʒj	Adipis	ʒj

The megalosporon endothrix in the scalp requires for cure a longer time and far severer measures. Epilation is a necessity, and such drugs as mercury, chrysarobin, pyrogallic acid, and formaldehyde are indicated. The mild pustular and granular forms caused by the megalosporon ectothrix are apt to be very obstinate, and the author has known a case last twenty-seven years. In obstinate cases, Dr. White suggests scarification and curetting, with subsequent skin grafting. The treatment of the severe, suppurating lesions of megalosporon ectothrix consists of thorough surgical measures, according to the author, but in this many observers will disagree, for such cases tend to spontaneous cure in Great Britain.

Phineas Abraham[2] describes again his apparatus made by Messrs. Mayer & Meltzer and Messrs. Arnold & Sons, for pumping creasote into the diseased patches. He first cleanses away all the grease by soft soap and hot water, and dabbing with alcohol and ether. He then applies his exhausting apparatus to the patch, by which creasote or guaiacol and ozone ether are made to penetrate into the follicles. A series of cups are required to deal with the different sized patches. The idea is certainly a good one.

Bellini[3] applies an interrupted electrical current, which causes the hair follicle to become more prominent. At the same time, an antiseptic is applied, by preference **Argentamin** (1 to 5 per cent.), which, under the circumstances, the author asserts, is made to penetrate.

H. Lyle,[4] of Liverpool, advocates **Scraping** each patch with a Volckmann's spoon, and then by means of a piece of cotton-wool rolled and tied round the end of a glass rod, rubbing well in a solution of **Silver Nitrate** (ʒj to ʒj proof spirit). This is done twice a week.

Prof. Marshall Ward, in a communication to the Royal Society,

records the discovery of a horn-destroying fungus (onygenia equina), attacking cows' horn. It has two kinds of spores—chlamydospores, which were cultivated in hanging drops; and ascospores, which also grew. He says the spores pass through the body of an animal in nature.

REFERENCES.—[1] "Journ. Cutan. and Gen-Urin. Dis.," Jan., 1899; [2] "Clin. Journ.," Feb. 15, 1899; [3] "Giorn. ital. d. mal. ven. e d pelle," 1899, Part i.; [4] "Lancet," Oct. 8, 1898.

TONSILLITIS IN INFANTS.

Henry Dwight Chapin, M.D., New York.

Dr. J. Eross[1] has observed twenty-two cases of follicular tonsillitis in the newly-born. The disease, which is often overlooked, appeared in the form of small nodules of a snow-white colour, most frequently the size of a pin-head, seldom as large as a lentil. Later the nodule changed and became of a yellowish colour. There were seldom more than five or six nodules on one tonsil. They never became confluent so as to form a membrane. The exudate usually disappeared in from one to three days, and the mucous membrane presented its normal appearance.

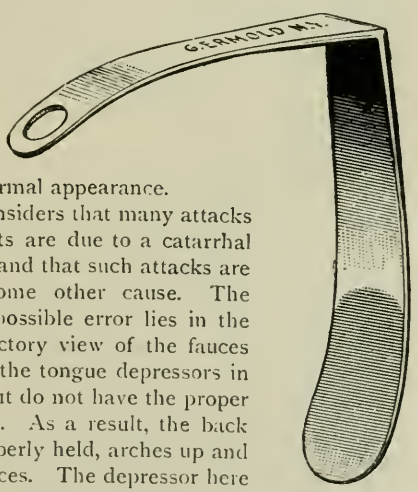

Fig. 44.
Author's New Tongue Depressor.

Dr. Henry D. Chapin[2] considers that many attacks of fever and illness in infants are due to a catarrhal inflammation of the throat, and that such attacks are apt to be attributed to some other cause. The principal reason for such a possible error lies in the difficulty of getting a satisfactory view of the fauces in young infants. Most of the tongue depressors in use are not only too large, but do not have the proper slant for the infant's tongue. As a result, the back of the tongue, not being properly held, arches up and obstructs the view of the fauces. The depressor here presented (*Fig.* 44) is small enough for the youngest infant's mouth, and is intended to curve over the tongue to the base of the epiglottis. By exercising a little pressure downward and forward the parts will come into clear view. Of course the infant should be properly held and placed before a good light. When everything is in readiness the left hand is used to steady the head while the right hand manipulates the depressor. These details will naturally suggest themselves to the careful physician

but are often overlooked, with the result of unduly fretting the infant and failing in the examination. In infants tonsillitis, as distinct from pharyngitis, is rare. The whole mucous membrane of the pharynx and tonsils is involved in the catarrhal inflammation. The tonsils may be somewhat enlarged and are covered with very fine pin-head points of a whitish exudation. These points can be recognised only when the fauces are well exposed in a good light. In rare instances the uvula is swollen and infiltrated.

The treatment consists in removing the cause, whether it be a deranged stomach, defective action of the skin, or faulty hygienic surroundings. The recurrence of attacks of pharyngitis in infants is the most common cause of post-nasal catarrh in children. Frequent **Irrigation of the Nostrils** with normal salt solution, or boracic acid solution, should be employed in all cases in which there is a tendency toward pharyngitis in infants. Pharyngitis and tonsillitis are more common in infants than has been supposed, and are a fruitful cause not only of present discomfort but of post-nasal catarrh in children. Repeated attacks will surely cause enlargement of the adenoid tissue at the vault of the pharynx as well as of the faucial tonsils.

REFERENCES.—[1] "Wien. med. Presse," No. 8, 1898; [2] "Med. News," March 4, 1899.

TONSILS (Diseases of). *W. Milligan, M.D.*

In the treatment of *Chronic cervical lymphadenitis* Goodale[1] has secured certain remarkable results from the introduction of various drugs into the tonsillar crypts. In his experiments a 10 per cent. aqueous solution of **Iodine** was used, and was injected by means of a hypodermic syringe. The injections were repeated every third or fourth day. In the majority of his cases a marked reduction in the size of the glandular swelling took place. In a few cases, however, no change was noted; but this may have been, as he remarks, due to the fact that some other focus of irritation was present. That a general systemic infection may be due to absorption through the tonsils is illustrated by certain cases published by Jessen,[2] who emphasises the fact that tonsils with a normal appearance may yet contain a hidden focus of suppuration. He believes that those cases which are likely to be followed by a severe general infection may be recognised from the fact that the exudation is not situated in the lacunæ, but exists in long yellowish white streaks extending from above downwards over the surface of the tonsil. He also believes that bacteria causing such affections as tuberculosis may penetrate through the tonsils, and in his opinion the adenoid tissue in the various tonsils is a more frequent starting point of general infection than is usually supposed.

Treitel lays stress upon the same theory, and remarks that chronic tonsilar abscesses are not infrequently the starting point of a wide-spreading infection, and advocates the laying open of all tonsillar lacunæ in patients subject to recurring attacks of sore throat.

The subject of *Latent tuberculosis of the tonsil* has been carefully investigated by Hugh Walsham,[4] whose researches were conducted partly by the examination of tonsils, cervical glands, and follicular glands of the base of the tongue in certain cases of tuberculosis, which came before him for *post-mortem* examination, and partly by the examination of portions of hypertrophied tonsils and naso-pharyngeal adenoids removed from the living subject. In a series of thirty-four consecutive *post-mortems* he found the tonsils to be more or less tuberculous in twenty cases, in marked contrast to the negative results obtained from the examination of tonsils and adenoids removed from the living subject.

His deductions are as follows: (1,) That the tonsils instead of being almost immune from tubercular disease are very frequently affected: (2,) That tubercle may be primary in the tonsil; (3,) That the tonsils are very frequently affected secondarily in persons suffering from pulmonary tuberculosis; (4,) That when the tonsils are tuberculous the cervical glands receiving the lymphatics from these organs are frequently affected with tubercle; (5,) That the follicular glands at the base of the tongue are rarely found tuberculous; (6,) That the tonsils may be affected from without or through the blood stream in acute miliary tuberculosis.

In regard, however, to the frequency of the occurrence of tubercular adenoid vegetations other observers have come to somewhat different conclusions, as will be noted from the following figures: Dieulafoy[5] found tubercular adenoids in 20 per cent. of his cases; Brindel[6] in 12·5 per cent.; Gottstein[7] in 12 per cent.; Pfluder and Fischer[8] in 15·6 per cent.; McBride and Turner[9] in 3 per cent.; and Milligan[10] in 16 per cent.

The occurrence of *bony* or *cartilaginous nodules* in the substance of the tonsil appears to be somewhat commoner than is usually supposed. Walsham,[11] in a series of thirty-four consecutive *post-mortem* examinations came upon well-marked nodules in two cases. In his first case the patient, a man aged fifty, died from acute pulmonary tuberculosis. Throughout both tonsils at the base of the crypts were numerous small masses of bone discernible with an ordinary pocket lens. In his second case the patient, a male aged twenty-seven, died from chronic pulmonary tuberculosis. Throughout the adenoid tissue of both tonsils large masses of cartilage surrounded by strands of dense fibrous tissue were visible.

The accompanying illustration (*Plate XVI, Fig. A*), shows one of the cartilaginous masses in the adenoid tissue of the tonsil from the male patient aged twenty-seven.

In *Fig. B*, taken from the male patient aged fifty, the cartilaginous nodule is seen to be undergoing transformation into bone.

The author regards these nodules as of fœtal origin, *i.e.*, cartilaginous rests derived from the second branchial arch. The conversion into bone may be a senile change, but it is probable that a small amount of bony material may be present from the first, as in a case recorded by Roth occurring in a child aged two years. The late Prof. Kanthack looked upon them as due to some metaplastic process. Wyatt Wingrave,[12] on the other hand, regards them as originating in developmental vestiges and of by no means infrequent occurrence.

REFERENCES.—[1] "Boston Med. and Surg. Journ.," May 19, 1898; [2] "Münch. med. Woch.," June 7, 1898; [3] "Deut. med. Woch.," No. 48, 1898; [4] "Lancet," June 18, 1898; [5] "Bull. Acad. de méd.," April, 1895; [6] "Annal. des malad de l'or," 1894; [7] "Berlin. klin. Woch.," Aug., 1896; [8] "Archiv. f. Laryngol," Bd. iv., Heft 3; [9] "Edin. Med. Journ.," 1897; [10] "Brit. Med. Journ.," Oct., 1898; [11] "Lancet," Aug. 13, 1898; [12] Ibid., Sept. 17, 1898.

TOOTHACHE. *J. G. Turner, F.R.C.S., L.D.S.*

Generally, toothache depends on one of two conditions: (1,) Caries, with or without exposure of the tooth pulp; (2,) Septic inflammation in the parts around the tooth.

In the first case the pulp is yet alive, and the tooth is spoken of as a "live tooth;" in the second, the pulp has died, and the septic inflammation is due to the absorption through the apical foramen of products of decomposition of the dead "nerve"—the tooth is spoken of as a dead tooth.

It is important to ascertain whether a tooth is "alive" or "dead," for treatment differs accordingly. The pain of a live tooth may often be relieved at once, and time gained for a visit to a dentist who will be able to save the tooth; on the other hand the septic inflammation round a "dead" tooth is most likely to run on to formation of an alveolar abscess, and, short of extraction, very little can be done by the general practitioner to relieve the pain.

The main points in diagnosis will be manifest when it is understood that the lesion in the one case is *inside* the tooth, and in the other *outside*. True, the tooth is carious in both cases, but the important factor in considering the pain is whether the tooth-pulp is alive or dead.

Given a painful, carious tooth, if the lesion is *inside*, that is, if it depends on pain from a living pulp, the tooth itself will be free from

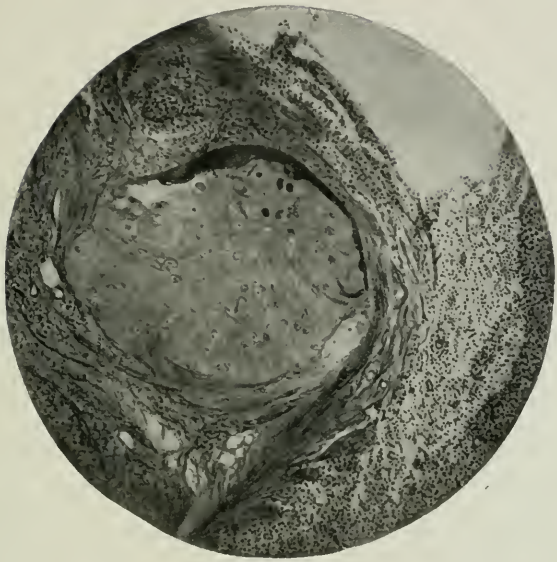

Fig. A

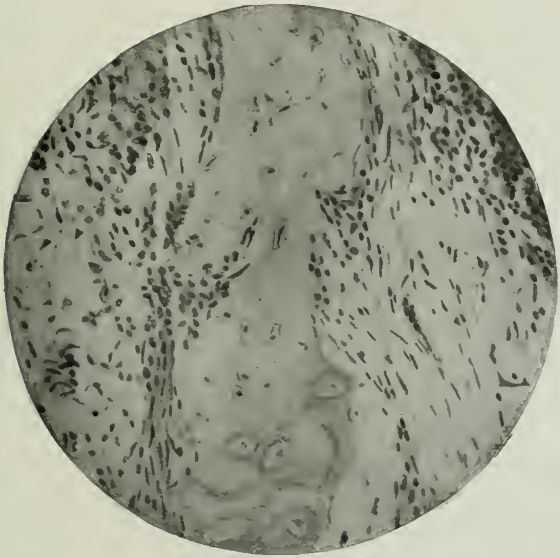

Fig. B.

Cartilaginous and bony nodules in tonsils.

pain on pressure (provided the pressure is not made so as to be transmitted to the pulp), and the parts round will likewise be free from tenderness. But on making pressure right into the cavity, if made in such a direction as to reach the pulp, acute pain will be caused. Changes of temperature, access of hot or cold water, access of sweet or salt substances, will all set up attacks of pain. The pain will be intermittent and of a throbbing nature, shooting along the nerve trunk, and often referred to other parts of the face. Thus a lower tooth may be pointed out when an upper is affected, and pain in a lower wisdom tooth is often felt in the bicuspids of the same side. The pain is often referred from a lower tooth to the ear, or from either jaw to a spot on the temple a little above and in front of the upper edge of the pinna.

But if the lesion is *outside* the tooth, if the pain depends on septic osteitis, periodontitis and periostitis, then according to the acuteness of the inflammation, both the tooth and the surrounding parts are tender on pressure. In the early stages there is no swelling, but the tooth feels elongated, being raised in its socket by pressure of inflammatory exudation into the alveolar-dental ligament, and is the first one bitten on in closing the teeth; hence the patient avoids biting closely. Later there is a swelling, first in the alveolar-buccal sulcus, and then of the face, and accompanying this there is often great relief of pain. This is due to the pus making an exit for itself through the outer bony plate, with consequent relief of pressure. The pain itself is at first dull and heavy, and more or less continuous; later it is continuous, very acute and throbbing, like the pain of pus under pressure in any other part. There is a rise of temperature of two or three degrees. Both pains are worse at night when the patient is warm in bed or on lying down—worse when anything increases the vascular tension of the part.

Tabulated the differences are:—

Living Tooth.	Dead Tooth.
Pain from inside.	*Pain from outside.*
Due to tooth pulp.	Due to septic periodontitis, periostitis, and osteitis.
Tooth not tender on pressure.	Teeth tender on pressure and "elongated."
Surrounding parts not tender. No swelling.	Surrounding parts tender, and later swollen.
Brought on, or aggravated by heat, cold, sugar, salt, etc.	Less influenced by these agencies.
Pain shooting, throbbing, and often referred to other parts; intermittent.	Pain dull at first and not continuous; continuous and throbbing later.
Temperature normal.	Temperature raised.

These are the wide differences, but the two conditions may approach each other in their symptomology so as to lead to error in diagnosis. Thus a tooth with an inflamed pulp is often rather tender on pressure, and heat and cold often cause considerable pain in cases of septic trouble dependent on teeth.

IMMEDIATE TREATMENT.—Syringe the cavity clean with warm water (this should be done before attempting to make a diagnosis).

If the pain is due to a living nerve, gently dry out the cavity with absorbent wool and place in it a pledget of wool soaked in **Pure Carbolic Acid** or **Oil of Cloves;** over this place, with as little pressure as possible, a pledge of cotton wool soaked in a spirituous solution of **Gum Mastic.** If pain continues it may be due to pressure of the plug on the exposed pulp.

This treatment is useful for any carious living tooth, whether the pulp be exposed or not; and it must be remembered that in some people carious dentine is so sensitive that the pain due to it is as severe as that due to an exposed pulp.

If the pain is due to septic absorption and is severe, only **Immediate Extraction,** at whatever stage it is when seen, however swollen the gums and face, however difficult for the patient to open the mouth, and however ill the patient may feel—only immediate extraction will relieve the patient. There is no special danger in this, dependent on the swollen condition of the parts, though a very strong prejudice exists against extracting when the face is thus swollen. On the other hand pain rapidly ceases, pus is evacuated, and the chances of dangerous septic complications (*e.g.*, spreading septic phlebitis) cut short.

If the pain is not very bad, **Carbolic Acid** may be put in the cavity, as above described, in the hope that some may find its way down the root-canal, and by disinfecting it destroy the septic focus, but *without* the mastic plug, which would tend to dam back any discharge which might find exit through the root-canal; **Hot Fomentations** may be ordered, *e.g.*, a big hot sponge outside the face, to relieve pain; and a mixture of

℞ Tinct. Iodi (double strength) | Tinct. Aconiti (Fleming's) āā ℥ss

painted on the gums frequently. The gums will probably be blistered by the strength of the iodine here recommended, and when making the application the parts should first be dried and cotton wool packed into the cheek to keep the iodine from spreading.

The use of cocaine is not to be recommended. As a general rule **Opium** is the only drug which can be relied upon to relieve the pain of a forming alveolar abscess, and procure sleep. **Leeches** may be tried

if the patient will consent; but mere scarification of the gums is a needless infliction of pain, as but little bleeding follows.

Referred Pain of Toothache.—As mentioned above, the pain of toothache is frequently referred from one part to another. This reference is *never from one side to the other;* the lesion is always on the same side as the pain. Apart from the fact that the patient very commonly finds difficulty in locating the exact tooth, it is not uncommon to find a tooth at some distance from the offender indicated. The pain may be referred to the upper jaw while the offending tooth is in the lower, and *vice versa,* but not necessarily to the *corresponding* tooth. Or the pain may be referred to another tooth of the same jaw, more especially in the lower, where the exit of the inferior dental nerve through the dental foramen in the bicuspid region accounts for the pain of a molar tooth, especially the wisdom tooth, being referred to one of the bicuspid teeth. The converse has not been noted by the writer.

Perhaps referred pain of toothache most commonly takes the form of "neuralgia." This is felt most frequently in the temporal region and in the ear, but may be felt in any part of the distribution of the fifth nerve, the trunks of which can often be traced out in anatomical order by following the course of the pain. Thus, if enquiry be made, it may be found that pain, started by a lower tooth, spreads first to the ear and temple following the auriculo-temporal nerve, then to the upper jaw by the second division of the fifth, and finally to the frontal region by the first division. Pain from an upper tooth will equally mark out the course of the nerve, but does not necessarily spread first to the first or third division, though the latter appears more frequent. If it can be definitely determined that the pain always starts in one or other jaw the probability is that the lesion is in that jaw. Pain referred to the *ear* is almost always due to a lower tooth; while pain referred *down the neck* (*not throat*) *is always due to a lower tooth.* The writer has seen this pain extending down in the mid-axillary line as far as the last rib, and a case is recorded where the only symptom of an irritated tooth pulp of a right lower molar was constant pain near the right nipple.

REFERENCE.—[1] "The Dental Cosmos," 1895.

TOXIC INSANITY. (See "Insanity.")

TRACHOMA. (See "Eyelids.")

TUBERCULOSIS IN CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. Comby[1] has studied forty-five cases occurring in children between three and fifteen years of age. Five clinical varieties could

be distinguished: (1,) *Apyretic tuberculosis*, showing that latent and torpid cases are not very rare; (2,) *Febrile tuberculosis*, with varying temperature changes, progressive course of the disease and death in a condition of marasmus; (3,) *Tuberculosis of a pneumonic or broncho-pneumonic form*, simulating these diseases very closely; (4,) *Pleural- and pleuro-peritoneal tuberculosis*, often curable; (5,) *Tuberculosis simulating typhoid fever*, with long-continued gastric symptoms. At autopsy these cases often show a generalised as well as a pulmonary tuberculous process. The prognosis is less grave in later childhood than in infancy, where pulmonary tuberculosis runs a rapid, and almost always a fatal, course. In older children recovery is not rare.

REFERENCE.—[1] "Arch. de méd. des Enfants," vol. i, No. 5.

TUBERCULOSIS (in New South Wales).

G. Lane Mullins, M.A. M.D., Sydney.

During the past forty-two years (1857-98) there have been nearly thirty-six thousand deaths from tuberculosis in the Colony of New South Wales.

During the years 1885-96 there were seventeen thousand one hundred and fourteen deaths from tubercular diseases in the Colony, while there were twelve thousand eight hundred and eighty-four from the six chief zymotic diseases, *viz.*, smallpox, measles, scarlet fever, whooping-cough, diphtheria and typhoid fever.

Within the metropolitan area (Sydney and suburbs), there were four thousand seven hundred and twenty-six deaths from tuberculosis, and two thousand nine hundred and twenty-five from these zymotic diseases during 1890-96. Immense sums of money are spent every year in the prevention of infectious fevers; yet the most deadly disease in the world is neglected. Fevers usually attack children, run a short course, protect from subsequent occurrence, and leave their subjects able to work. Tuberculosis on the other hand, strikes down those in the prime of life, runs a chronic course, and causes permanent incapacity for occupation. Tuberculosis is a communicable disease; experiments have demonstrated this clearly. This communicability being granted, it is our duty to protect the healthy members of the community against the ravages of the disease.

Tuberculosis is caused by the tubercle bacillus of Koch, which gains an entrance to the body from without. It affects man and many of the domestic animals, such as cattle, horses and pigs. Heredity plays a very unimportant part in the production of the disease, and this mode of infection must be extremely rare. It is the predisposition which is so often confounded with the transmission of the disease.

The chief modes of communication are inhalation and ingestion, but the disease may be inoculated. The bacilli may be received from the air by inhalation, and from tuberculous food, such as milk or meat, by ingestion. Probably, in adults at any rate, inhalation is the chief mode, and next to that ingestion.

There are some who doubt the identity of human and bovine tuberculosis. But there are on record numerous instances of infection from human beings to lower animals, from one animal to another, and from the lower animals to man. Where cattle are few or absent, consumption exists in man to a much smaller extent. Where cattle are numerous or are kept in the houses, tubercular diseases are frequent both in man and the lower animals.

That tuberculous milk may, and frequently does, cause tuberculosis in human beings is beyond all doubt. The milk containing the tubercle bacilli enters the mouth and passes on to the throat. During the time of its passage the bacilli may be deposited in the mouth, tonsils, pharynx, or adjacent structures. More bacilli are added every two, three, or four hours, according to the frequency of feeding. These bacilli may be washed further down and into the stomach, or may cause infection in the mouth, etc., or may be inhaled into the lungs. The milk that passes into the stomach may deposit more bacilli, or may continue on its journey into the intestine. Strauss and Wortz have shown that the bactericidal quality of the gastric secretions is insufficient to destroy the bacillus tuberculosis. Infection may thus arise in the mouth, tonsils, throat, lungs, or intestinal canal from tuberculous milk. The lung infection may be primary from direct inhalation of the bacilli lodged in the mouth, or may be secondary to infection of other parts.

Thorough cleanliness of dairy premises, workers, cows and vessels should be rigidly enforced. All cattle should be tested with tuberculin, and strict isolation of those reacting to the test should be enforced. The public should demand from dairymen a certificate from an expert that the dairy contains no tuberculous animals. No cattle should be admitted to a dairy until they have passed the test. No consumptive should be allowed access to dairies, or to take part in milk selling. All milk should be sterilised by boiling, or it should be Pasteurised. No cattle should be allowed to enter the Colony until they have passed the tuberculin test.

The danger from tuberculous meat is not so great as that from the milk of infected cows. Meat being cooked before it is eaten is more likely to have the bacilli it contains destroyed, except in the case of large joints, or when imperfectly cooked. It has been shown that no

matter how high the temperature may be raised near the surface of a joint, the heat rarely exceeds 140 degrees Fahrenheit in the centre; except when the joint is under 6 lbs. in weight. Ordinary cooking may destroy any tubercle bacilli on the surface, but it cannot be relied upon in the slightest degree to destroy those in the centre. The least reliable method of cooking for this purpose is roasting before the fire, next comes roasting in an oven, and then boiling. In the present state of our knowledge regarding tuberculous meat, it is advisable to condemn the whole carcass of any animal slaughtered for food in which even localised tubercular lesions are found. This is now the practice in Sydney, and there appears to be no reason for altering it.

We cannot allow phthisical patients to enter the wards of our general hospitals for treatment, for we are unable to prevent communication between the consumptive and other patients in these institutions. Experiment has shown that the air which a consumptive breathes becomes charged with bacilli of tuberculosis, the expectoration, which is usually copious, dries up and leaves the bacilli to mingle with the dust in the room, and cause infection among others. If, then, consumptive patients occupied the same wards with others in the hospitals, they might communicate the malady to those who are debilitated by disease or accident. The power of resisting disease is at a minimum among hospital patients, and thus they are peculiarly susceptible to the bacilli, to which they fall an easy prey.

There are many objections to a large consumptive hospital within city boundaries. While the segregation of consumptives might be beneficial to the community at large, their isolation in the bacilli-laden atmosphere of the town must prove injurious to the patients themselves, but the plan of erecting a home for those who are in too advanced a stage to travel to the country districts and benefit by the climatic treatment, is an excellent one. A small building containing a few beds would be ample for such cases. To this institution an out-door department should be attached, where patients who are unable to leave the city might be treated in the early stages. If a patient be found to be suffering from phthisis, and removal from the impure air of the city be impracticable, he might be treated as an out-patient, but such cases should not be treated within the walls of a city building. A small hospital should be established in each large city, together with three or four homes in the country districts, which might be used by those who are in the curative stage, or in the progressive stage before all hope is abandoned. A large consumptive hospital in the city is very objectionable.

At the Brisbane meeting of the Australasian Association for the

Advancement of Science (1895), the writer contributed a paper showing the death rate from phthisis in every district in New South Wales. These figures showed that in Sydney the rate was 1·96; suburbs, 1·16; country, 0·65; or the ratio for city, suburbs and country of 3, 2 and 1. Probably the most suitable locations for country sanatoria would be on the Western slope of the Blue mountains, the Riverina, New England, the Queensland border on those extensive, open plains between the MacIntyre and Gwydir Rivers. A coastal station might be established in the Illawarra or Shoalhaven districts. There are in Australia many and varied climates which, so far, no serious attempt has been made to take advantage of.

What is required most is the sanitary education of the masses, and the co-operation of individual members of the community. The public must be made to understand that consumption is a preventable disease, that their lives depend, to a great extent, upon the actions of one another, and that the causes of preventable diseases are local conditions of filth and nuisance, polluting air and water, and the reckless dissemination of contagion.

REFERENCES.—[1] "Aust. Med. Gaz.," Aug. 20, 1895, Jan. 20, 1898; [2] "Brit. Med. Journ.," Aug. 1898; [3] "Report of 7th Meeting of the Aust. Assoc. for the Advancement of Science," 1898.

TUBERCULOSIS (Laryngeal). (See under "Larynx.")

TUBERCULOSIS OF THE BLADDER. (See "Bladder.")

TUBERCULOSIS OF THE SKIN. *T. Colcott Fox, M.B.*

Caustic Applications.—Unna [1] speaks well of the following ointment in certain cases of lupus vulgaris :—

℞ Acidi Salicylici	2 parts	Ext. Cannabis Indica.	4 parts
Liq. Antimonii Chloridi	2 parts	Adipis Lanæ	8 parts
Kreosoti	4 parts		

Veiel [2] destroys the affected tissues with an ointment composed of vaseline containing 10 per cent. of **Pyrogallol**; this is spread on lint and applied to the part for three to five days. The wound so produced is then allowed to heal, being dressed with a vaseline ointment, containing from ½ to 2 per cent. of pyrogallol.

S. Ehrmann [3] has used the following treatment of lupus in patients who are either unwilling or unable to undergo the ordinary radical treatment. An ointment is made as follows :—

℞ Resorcin	3 parts	Vaselin	2 parts
Lanolin	4 parts		

This ointment is spread on lint, and applied to the affected part every morning and evening. The superficial layer is removed as it becomes

necrosed. This application is continued for eight or ten days, and then some **Boracic Ointment** is applied for three or four days, and then the **Resorcin Ointment** can be used once more. This alternation of applications may be continued for weeks, or even months. It is quite exceptional for this treatment to interfere with the daily work of the patient. Resorcin has a selective power; it does not destroy healthy tissue. Ninety-eight cases have been treated by this method with good results, and the author has used it with success in a case of lupus verrucosus of the back of the hand and forearm.

Protopopof[4] has been using Serenin's creasote treatment, as modified by Pospelof, *i.e.*, the lupus scarified before the **Creasote** is applied. The treatment does not seem to have been very successful.

Radical Extirpation by Complete Excision.—F. Schulze[5] gives his experience in forty-seven cases of lupus of the face. He says the incision should always be made about a centimètre from the edge of the disease, and then the disease patch is dissected up, and the superficial half of the subcutaneous fatty tissue must be removed with it, in order to get rid of all lupus cells. If the whole of the subcutaneous fatty tissue be removed, an unsightly puckered scar is left. The hæmorrhage must be arrested by pressure or by torsion, and no ligatures should be used, for they are liable to interfere with the transplanted flap. Any affected glands should be removed also. The transplantation of skin may follow immediately after the removal of the diseased tissue. Schulze prefers to cut one large flap, and this is placed on the wound so that the edges of the flap extend beyond the edges of the wound; the flap is fastened in position by some stitches, and then is covered by sterilised gauze. If the lupus has attacked the anterior nares, a similar operation can be performed. The results of these operations are very satisfactory, and very little deformity results.

Buschke,[6] Nélaton, Brocq and others, at the French Society of Dermatology and Syphiligraphy, June 8th, 1899, spoke highly of the results obtained by them. Brocq thought that in lupus of the orifices cauterisation gave better results. Sabouraud stated that histological examination of the material obtained by scraping always shows giant cells cut in two.

Treatment by Mercury Injections.—A number of authors (Berntheim, Tschlenow, Emery, and Milian, etc.) record favourable results in obstinate cases of lupus following **Calomel** injections. Bernstein[7] collected the reported cases, and found that in thirty-seven there were positive results, and in ten negative. In a syphilitic patient shown by Deutsch,[8] a lupus vulgaris underwent a striking regression after eleven

injections (= 55 c.c.) of **Gray Oil.** Creutzer wrote a Lille thesis (1897-8) on the treatment of lupus vulgaris by means of **Mercury** and **Iodides,** and especially by intramuscular injections of gray oil.

Treatment by Koch's Tuberculin R.—Further reports have come to hand concerning the action of **Koch's Tuberculin R.** Bukovsky,[9] of Prague, records his experience in fifteen cases of lupus of the skin with implication of the glands, seven of which were complicated with apical disease or scrofulodermia; in two cases of simple scrofulodermia, and two of tuberculosis verrucosa. The injections were made, on the average, every second day, in the skin between the shoulder-blades, and without ill results locally. In some cases, where larger doses were used, or there was great susceptibility to the remedy, the injections were made at intervals of every three to six days. The general reaction was unfailing but variable, and its degree seemed to depend to some extent on the quality of the preparation. The local reaction was also constant, and often marked. In no case was a cure attained, although striking improvement was noted in two cases. In the rest the good effects were much less obvious, and in some *nil.* The injections were useful for diagnostic purposes.

Napp and Gronven[10] give a matured report from "Doutrelepont's Clinique" at Bonn on thirty-seven cases of lupus and some other tuberculous patients. The conclusion reached is that Tuberculin R. is incapable of producing a complete cure, but can be safely employed as a useful adjuvant to other methods.

Faure has also written a Paris Thesis (May, 1899) on the same subject.

Krzysztalowicz[11] reports thirteen cases treated with the **New Tuberculin;** eleven were cases of lupus, one had tuberculosis of skin and bones, another tuberculous ulceration of the genitals. The amount injected varied from $\frac{1}{5000}$ mg. to 20 mg., and the number of injections from eighteen to fifty-one. Constitutional reaction was slight, and local reaction only occurred after large doses. The author concludes that lupus cases improve under this treatment, but are not cured.

Serum Treatment.—Dr. E. A. de Schweinitz, the director of the Biochemic Laboratory of the Bureau of Animal Industry, of Washington, announced that he had obtained an antitubercle serum by inoculating horses and cows with attenuated cultures of tubercle bacilli. With the serum so obtained he had secured partial or complete immunity to tuberculosis in guinea-pigs. This antitoxin can be safely employed in daily subcutaneous doses of from ten to forty minims. Continued observations have created a favourable impression of this preparation, and Dr. Fordyce,[12] of New York, suggested its use in an

unusually extensive case of lupus, where the methods of cure commonly in use were precluded. The improvement was rapid and striking.

Maragliano's Serum in the Treatment of Cutaneous Tuberculosis.—Fileti and La Mensa[13] treated ten cases of lupus and scrofulodermia with **Maragliano's Antitubercular Serum,** using it both subcutaneously and locally. In a case of lupus of the hand occurring in a child, aged nine years, a cure resulted in forty-six days, six injections of the serum having been made in that period, besides using it locally. As no good result appeared, however, in any of the other cases treated by this method, the apparent benefit in this one case was probably only a coincidence.

Treatment by Thyroid Colloid—Pearce Gould[14] exhibited a woman cured of an extensive ulcerative lupus of the face in a few weeks, by **Thyroid Colloid.** Pringle confirmed the value of this treatment in such cases, but thought they tended to relapse unless the treatment was continued indefinitely. Whitfield had observed the best results from the thyroid treatment in ulcerative cases.

Aerothermotherapy, or Hot-air Treatment.—Those interested in this matter may be referred to a description of the apparatus recommended by various authors, which is given by F. Jayle in "La Presse médicale," September 10th, 1898.

Finsen's Phototherapy.—We referred last year to this treatment. The latest report is accessible to all in the illustrated article by Valdemar Bie.[15] This treatment has attracted the attention of various influential persons, and is being boomed with great vigour. It is expensive and prolonged, and extensive cases are therefore unsuitable. No doubt the benevolent will shortly afford the means for this treatment to be carried out elsewhere than in Copenhagen by the founding of suitable institutions, as it is the poor who chiefly suffer from lupus.

Treatment by Röntgen Rays.—Further experience is recorded of this treatment. Albers[16] reports two cases, one of the nasal region cured in eight months, and another of the cheek and upper lip cured in six months. The healthy skin was protected from the rays by plates of lead. He advises not to employ too powerful rays.

We may refer again to Kümmel's cures in sixteen patients, who were exposed for fifteen to twenty minutes, twice a day, for a period of four weeks to several months. The sound skin is protected by a light sheet of lead or stanniol, cut to expose only the lupus patch, with the tube from 20 the 40 cm. distant. All irritation of the skin is most carefully avoided, and exposure individualised to prevent the slightest dermatitis. The lupus patches heal over with a smooth surface scarcely to be distinguished from normal skin.

Schiff, of Vienna, has also obtained good results. He says injury to the skin may be avoided if the intensity of the radiation does not exceed a certain amount, and if the treatment is discontinued on the appearance of the slightest hyperæmia.

This treatment has the advantage over Finsen's phototherapy that more extensive surfaces can be attacked.

Lambin [17] has investigated the action of X-rays on both healthy and diseased skin, and comes to the following conclusions: (1,) The action is beneficial in cases of lupus, chronic eczema, destruction of hairs growing on moles, and occasionally in cases of acne, lupus erythematosus, favus, psoriasis, elephantiasis, hypertrichosis, and freckles; (2,) On the other hand, the following accidents may result from the use of the X-rays: Dermatitis of varying severity, sometimes followed by abscess and necrosis, alopecia, pigmentation, and desiccation of the epidermis.

REFERENCES.—[1] "Deut. Med. Zeitung," 1898, No. 100; [2] "Arch. f. Derm. u. Syph," Band 44, 1898; [3] "Wien. Med. Blätter.," 1899, No. 2, [4] Quoted by "Treatment" from "Mediz. Obosrenie," 1898; [5] "Wien. klin. Runds.," No. 37, 1898; [6] "Arch. f. Derm. u. Syph.," Jan., 1899; [7] "Münch. med. Woch.," Nov. 15, 1898; [8] "Vienna Soc. of Derm.," Feb. 23, 1898; [9] "Arch. f. Derm. u. Syph.," Nov., 1898; [10] Ibid., Dec., 1898; [11] "Wien. med. Woch," No. 2, 1899; [12] "Journ. Cut. and Gen.-Urin. Dis.," Aug., 1899, p. 356: [13] "Gior. ital. delle Mal. Ven. e della Pelle Fasc.," 1897, i; [14] "Clin. Soc. Lond.," Oct. 28, 1898: [15] "Brit. Med. Journ.," Sept. 30, 1899; [16] "Fortschr. a. d. Gebiete d. Röntgenstrahlen," part i; [17] "Monats. f. Prak. Derm.," No. 10, 1899.

TUBERCULOSIS (Renal). (See "Kidney.")

TYPHOID FEVER. *Edwd. Wilberforce Goodall, M.D.*

ETIOLOGY.—Sidney Martin[1] has continued his researches into the growth of the Bacillus typhosus in soil. His conclusions are as follows:—

(1,) Cultivated soils are most favourable to the growth of the bacillus, and in them it may retain its vitality as long as four hundred and fifty-six days, even when the soil has become so dry that it can be finely powdered.

(2,) All virgin soils, sandy or peaty, moist or dry, are inimical to the growth of the bacillus, which eventually dies out, both at the surface and at a depth of three feet.

(3,) In favourable soils, in a moist condition, the bacillus flourishes, not only at 37° C., but at much lower temperatures, viz., 24°, 16°, 9°, and 3° C.

(4,) In soil favourable to the typhoid bacillus, the cholera vibrio was

found to be alive and vigorous after sixty-eight days, and the bacilli of diphtheria and anthrax are alive and pathogenic after sixty-six days.

These experiments confirm those of Robertson.[2] This observer placed typhoid bacilli in soil, which was watered occasionally with solution of organic matter. The bacilli were still present at the end of three hundred and fifteen days, during the winter months.

Delépine[3] found the bacillus in the earth between the bricks of a midden.

PATHOLOGY.—Of recent years evidence has been accumulating to show that intestinal ulceration is not necessarily present even in fatal cases of typhoid fever. A very complete case of this kind has been published by Bryant.[4] The patient was a child aged one year and nine months, who died after a febrile attack of three or four weeks' duration. During the time the child was in hospital there was no eruption; but the spleen was enlarged and there was broncho-pneumonia. Shortly before death a specimen of blood gave a smart Widal's reaction in 5 per cent. solution. At the autopsy no lesion of any kind was to be found in the intestine. There was septic broncho-pneumonia and enlargement of the mesenteric glands. Cultures taken from these glands yielded almost pure cultivations of the B. typhosus. A brother and sister of the patient were admitted to hospital at the same time suffering from typhoid fever. Bryant gives a very complete list of previously-recorded cases of the same nature.

Osler, who has worked for a long time past on this question, writes in the last edition of his "Principles and Practice of Medicine," as follows:—

"The wide existence of the typhoid bacilli has been repeatedly shown in cases which had the clinical feature of the disease, but without lesions in the small intestine. Typhoid fever is no more primarily intestinal than is small-pox primarily a cutaneous disease." According to him, typhoid fever can be divided into four groups:—

(1,) Ordinary typhoid with marked intestinal lesions.

(2,) Typhoid septicæmia, a general infection with the bacilli, without special local manifestations.

(3,) Typhoid fever with localisations other than intestinal; for example, lesions of the lungs, spleen, kidneys, and cerebro-spinal meninges may exist with very slight, or without intestinal lesions.

(4,) Mixed infections.

Horton-Smith[5] has produced an important paper "On the Respective Parts taken by the Urine and the Fæces in the Dissemination of Typhoid Fever." His conclusions are as follows: "The stools of a

typhoid patient separated from the urine contain typhoid bacilli in fair quantities, demonstrable by our present methods up to about the beginning of the third week. After this date the number begins rapidly to diminish, so that our methods no longer avail, as a rule, to find them. If, however, a relapse occurs, it may be preceded by a recrudescence of the typhoid bacilli, which can then be found again in the fæces, but during the greater part of the relapse itself, and throughout convalescence, the typhoid bacilli cannot be found in the stools."

"It can no longer be doubted that typhoid bacilli occur in the urine of typhoid patients, probably in about 25 per cent. of all cases. For the most part, though present in such numbers as to be demonstrated bacteriologically with the greatest ease, they are not present in sufficient quantity to alter the naked-eye appearance of the urine. In a smaller proportion of cases, however—probably about 5 per cent. of all typhoid cases—the urine is rendered turbid by their presence. They are nearly always in pure culture. They occur first late in the disease, rarely, if ever, before the third week, and may make their first appearance during convalescence. They generally remain present for some considerable time, for some weeks or even months. The prognosis of a case is not rendered more grave by the occurrence of this condition."

Urotropin, 10 grains given three times a day, has the effect of rendering the urine free from bacilli in forty-eight hours.

The importance of these observations on the question of the dissemination of the disease and the disinfection of the excreta are obvious.

DIAGNOSIS.—Concerning the value of the so-called Widal's test, we cannot do better than refer to some remarks made by Scholtz.[6] He and others have obtained positive results in a few non-typhoid cases with a dilution of the serum of 1 in 25 (4 per cent); therefore a higher dilution should be employed, at least 1 in 50 (2 per cent). Too much reliance must not be placed upon a negative result.

Both Quentin[7] and Filopowicz[8] state that in certain febrile affections, especially typhoid fever, the skin of the palms and soles becomes of a yellow colour, and subsequently desquamates. It is very doubtful, however, in the writer's experience, whether this is a sign of any value.

TREATMENT.—In a valuable paper on "The Operative Treatment of Typhoid Perforation of the Intestine," J. E. Platt[9] gives the results of operation in one hundred and three cases, with twenty-one recoveries (including three cases of his own, with one recovery), that he has col-

lected from various sources. The author discusses the objections to and difficulties of the operation. He advises that the incision in the abdominal wall should be made in the right semilunar line; that the perforation should be closed by turning its edges inwards and uniting the peritoneal coats by interrupted Lembert's or Halsted's mattress sutures, a single row being sufficient; that in cases where the wall of the bowel is in bad condition, or where there are several perforations near together, so that simple suture is insufficient, the formation of an artificial anus is a less severe procedure than resection; and that the abdominal cavity should be washed out and drained. Resort should be had to operation as soon as the patient has recovered from the shock set up by the perforation, that is within twenty-four hours.

Concerning the medical treatment of typhoid fever, it can hardly be said that any new method or drug has been introduced during the year. Brand's **Cold Bath Treatment,** or some modification of it, appears to be gaining in favour, F. E. Hare's[10] excellent work on the subject having drawn fresh attention to it. Good results are obtained in some cases by employing water at a higher temperature than was originally advocated by Brand—from 70° to 75°, or even 80° F., instead of 68° to 70° F. Hare[11] states that: (1,) "The great mortality of the disease is reduced by 50 per cent.; (2,) That nearly all the distressing symptoms connected with the pyrexial state, and many of those depending on the intestinal lesion, are alleviated to an extent not attainable by any other therapeutic measure; (3,) That nutrition is maintained and convalescence greatly accelerated; and (4,) That even in cases which terminate fatally, life is prolonged on the average by several days." The patient is placed in the bath whenever the temperature reaches 102·2° F. Sidney Phillips,[12] Stewart,[13] and Solis Cohen[14] give excellent advice on the treatment of the disease and some of its complications. Phillips, Cohen, Wilcox,[15] Bittman,[16] and Thistle[17] all recommend that attempts should be made at intestinal antiseptic treatment; **Bichloride of Mercury, Calomel, Chlorine Water,** and **Salol,** are the drugs mostly used. Thistle further believes that by the use of **Saline Purgatives,** much of the absorbed toxins, especially those in the bile, are eliminated.

In hæmorrhage, intravenous injection of **Saline Solution** (2 pints) is recommended by Phillips, Ramsey,[18] and others. The former also employs this measure in cases of extreme anæmia not due to hæmorrhage.

Professor Wright, of Netley, has, on his visit to India during the past year, *inoculated* a number of soldiers, as a prophylactic measure, against enteric fever, so far, it is stated, with good results. But a

longer interval of time must be allowed to elapse before any definite conclusion can be arrived at on the subject.[19]

REFERENCES.—[1] "Rep. Med. Off. of Loc. Gov. Bd.," 1897–98, p. 308; [2] "Lancet," Feb. 26, 1898; [3] Ibid; [4] "Brit. Med. Journ.," April 1, 1899; [5] "Lancet," May 20, 1899; [6] "Practitioner," Article "Public Health," Sept., 1898; [7] "Archives gén. de méd.," May, 1898; [8] "Centralb. f. die med. Wiss.," No. 11, 1898; [9] "Lancet," Feb. 25, 1899; [10] "The Cold Bath Treatment of Typhoid Fever," 1898; [11] "Brit. Med. Journ.," Dec. 17, 1898; [12] Ibid., Nov. 18, 1898; [13] "Montreal Med. Journ.," Feb., 1899; [14] "Therap. Gaz.," Aug. 15, 1898; [15] "Braithwaite's Retrospect," June, 1899; [16] "Cincin. Lancet Clin. and Med. Age," July 10, 1898; [17] "Med. Rec." (New York), Sept. 10, 1898; [18] "Intercol. Med. Journ. of Australasia," Dec. 20, 1898; [19] "Brit. Med. Journ.," March 4, 1899, p. 572.

TYPHOID FEVER (Cold Air Treatment of).

G. Lane Mullins, M.A., M.D., Sydney.

J. Murray-Gibbes[1] describes two methods by which the cold air treatment of typhoid fever can be successfully carried out:—

(*a*,) Cold air chamber. Mr. W. W. Crawford has prepared diagrams (see *Figs.* 45 and 46) of a cold air chamber or ward.

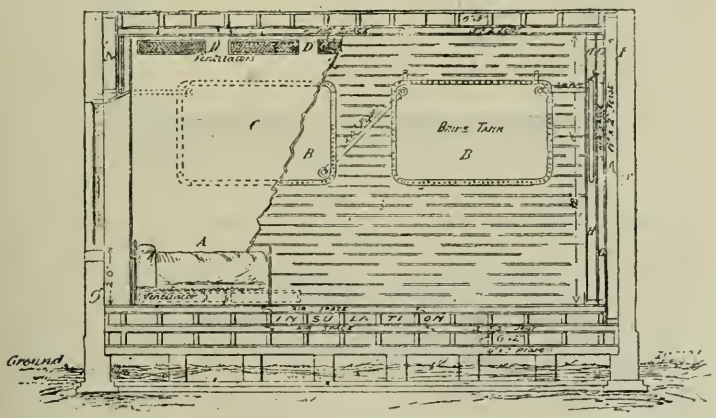

Fig. 45.

(*b*,) The local application of cold of any desired temperature by means of pipes in connection with a freezing machine. By means of tubular mattresses or pads, the whole or any part of the body can be treated. These pipes may be used for a hot water service when needed.

Explanatory Notes to Diagrams.

The room depicted in the drawings is an ordinary hospital ward, with the difference that in addition to the brick wall there is a 6-in. space (marked F), filled with pumice-stone as insulation, and then an air-space over that, which makes a complete insulation of dead air-space, non-conducting material, and brick wall. Inside the room, behind a false wall (marked C), are bracketed the brine tanks (B, B, B, B, B, B, B), hollow tanks with a space inside, one-and-a-half inches wide. These tanks are connected up with a small freezing machine, from which brine at a low temperature, composed of chloride of calcium or chloride of magnesium,

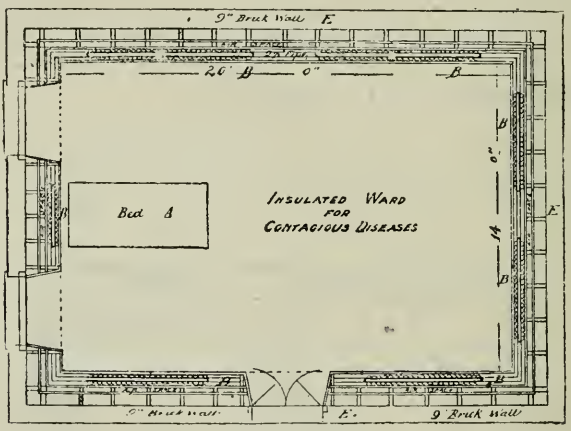

Fig. 46.

is pumped with great velocity. The flow of brine is regulated by the nurse by a simple tap in the room, and this tap is opened or closed according to the readings of the thermometer and the instructions of the doctor in charge, or an automatic thermostat can be placed in the room and set by the doctor to a certain temperature, and it will keep the room at within half a degree on either side of the temperature at which the thermostat is set. The ventilation of the room may be regulated automatically, or by an electric fan. The atmosphere of the room will be very dry.

References.—[1] "Aust. Med. Gaz.," April 20, 1898; *see also* "Med. Annual," 1898, p. 540.

ULCERS (**Varicose**). *T. Colcott Fox, M.B.*

Laplace[1] says that unless the varicose veins are radically dealt with, there is always a tendency for the healed ulcers to break down again. In cases where the superficial veins are enlarged without dis-

tension of the long and short saphenous veins, he ligatures the former at their points of entrance into the saphenous and popliteal veins. As these two veins drain the whole of the venous circulation, the ligature results in obliteration of the superficial veins. When there are large masses of veins on the limb, not affecting the saphenous vein above the knee, the author recommends Schede's method, which consists in making a circular incision about two inches below the knee, separating all the veins as they present themselves, and ligaturing them with catgut. The circular cut is then sutured.

After these operations the ulcers acquire a more healthy appearance, and begin to heal, and local dressings then do the rest. Apart from the operation on the veins, he advises the application of modern principles of asepsis combined with rest in cases of chronic varicose ulcer. Under an anæsthetic he freely removes the edges of the ulcer and scrapes the surface, thus transforming it into a healthy wound. The patient is then kept lying down till the ulcer has healed. The wound is dressed at intervals, and kept in a constantly aseptic condition.

Where Thiersch grafting has been performed, and suppuration threatens the life of the grafts, he removes all the gauze except the last layer, and keeps the wound cleansed with peroxide of hydrogen.

Marcuse[2] recommends for the callous ulcer with sharp indurated edges and the large neglected ulcers with copious secretion, the application of **Burow's Solution.** There are several formulas for this, but Marcuse gives alum pulv., 5·0; plumb. acet., 25·0; aq. destill, 500·0, and recommends as still more convenient: alum, 10 parts; plumb. acet., 50 parts, well mixed in a litre of water. A large piece of gauze dressing, moistened with the lotion is applied and covered with gutta-percha tissue. It is astringent, but not too drying, antiseptic, lessening pain and tenderness, and the warmth and moisture softens the indurated tissue. Subsequently Unna's zinc-glycerine glue is very useful. *The patient should be kept in bed for several weeks.* The latter is generally included as an important part of the treatment, but the problem too often in London practice, with the pressure on the bed accommodation, is to cure the patient without this desirable rest.

REFERENCES.—[1] "Therap. Gaz," Sept., 1898; [2] "Deut. med. Zeit.," No. 63, 1898.

URETHRA (Disorders of the). *E. Hurry Fenwick, F.R.C.S.*

Genito-Urinary Gangrene, Peri-Urethritis, and Extravasation of Urine.—Under the title of "Infiltration d'urine et péri-uréthritis," Dr. Jean Eseat,[1] of Marseilles, discusses the changes in the urethra and the peri-urethral tissues, in relation to extravasation and to gangrene.

The classical view of the primary lesion, consisting in the sudden rupture of the wall of the urethra under vesical effort, and the escape of a large quantity of urine into the cellular tissue of the perineum, must be reconsidered. Clinical and anatomical observations tend to show that peri-urethral cellulitis and gangrene are the result of septic infection pure and simple, and not of perforation of the urethral wall. In the majority of cases, a gangrenous cellulitis of bacterial origin is the primary lesion, and the extravasation of urine is a result. In considering generally the subject of gangrene, as it affects the genito-urinary organs, the author finds in these the same predisposition to gangrenous processes as are presented by the mouth, vulva, anus, intestine, and lung. Three clinical types may be recognised, of which the first and second are essentially similar :—

(1,) La forme foudroyant de gangrène génitale, described by Fournier and Emery. It is met with in healthy young subjects, with normal urine and urinary organs ; the gangrene attacks the prepuce, glands and scrotum, but spares the urethra and the corpora cavernosa ; it is, therefore, superficial rather than deep. Its origin is ascribed to streptococcal infection from the prepuce or urethra, the method of entrance usually remaining undiscovered. Recovery is the rule.

(2,) A superficial form of gangrene, described by Guyon and Albarran, in old debilitated patients with enlarged prostate, who are daily subjected to septic auto-catheterisation. It occurs apart from any extravasation of urine ; it is superficial, begins on the prepuce, and spreads to the scrotum, and is usually fatal within a few days. Four different micro-organisms have been identified, of which one is the streptococcus albus. The urinary origin of the infection is shown by the fact that injection of the urine into the tissues of animals is followed by gangrene.

(3,) A type of gangrene is described by the author, in which the urethra is mainly involved, and which results from the extension of septic infection from the urethra to the peri-urethral tissues. The urethra may slough partially or completely ; on incising in the middle line of the perineum, the urethra may appear black, as if carbonised.

Appearing clinically as a diffuse gangrenous peri-urethritis, it may simulate extravasation of urine, and has been erroneously described as such. It is most often met with as the final result of long-standing peri-urethral lesions in patients with stricture. The primary pathogenic factor is septic infection, and not urinary extravasation, as has hitherto been believed. The author maintains that there is no proof that straining of the bladder may cause rupture of the urethra behind

a stricture, and may drive a large quantity of urine suddenly into the cellular tissue of the perineum.

Extravasation is always preceded by septic peri-urethritis, which may be purulent or gangrenous; it does not occur in the form of a sudden gush, but drop by drop, just as it escapes from the meatus in an over-distended bladder. It is noteworthy that all forms of peri-urethral infection may develop in the absence of any obstacle to the outflow of urine, and may be observed in patients with stricture, who have always been able to pass their water satisfactorily. *Post-mortem* examination has further shown that the perforation of the urethra may be multiple, and may even be situated in front of the stricture. The number and locality of the perforations are determined by antecedent changes in the urethra and its surroundings, and not by vesical pressure. The idea, therefore, of the dependence of extravasation of urine on over-distension of the bladder must be given up.

When one observes a patient with stricture and retention suddenly develop a peri-urethral swelling, one must not conclude that perforation of the urethra has occurred. It is really a urinary abscess which has remained latent and unrecognised, and has now transgressed its boundaries, and erupted in the perineum. It is causing the retention, not resulting therefrom. If the collection be opened, a communication with the urethra may or may not be found; in the latter case, the evacuation of the pus frees the urethra from pressure, the bladder recovers its contractile power, and the urine escapes by the natural channel. Similarly, the gangrenous forms of cellulitis, which apparently develop with great suddenness, are really the result of long-standing changes in the urethra and peri-urethral tissues, whereby the normal tissues are replaced by a sclerosed and infiltrated tissue of low vitality. Hallé and Wassermann drew special attention to the wide extent of the changes caused by stricture; the urethra is involved, from the meatus to the neck of the bladder, and from its mucous lining to the corpus spongiosum and peri-urethral muscles. The changes include tissue degeneration, sclerosis, obliteration, endarteritis, and other results of chronic infection. This sclerosed tissue is most liable to succumb to any recent, superadded, more virulent infection, for the occurrence of which it is only necessary that the lining membrane of the urethra should be damaged sufficiently to allow of the passage of micro-organisms.

The Plastic Repair of Urethro-Perineo-Scrotal Fistulæ.—Mr. Hurry Fenwick[2] writes concerning this subject as follows:—

This complication of neglected strictures urgently demands skilful

repair by perineo-plasty, for the urinary burrows are a constant septic menace to the patient, besides being a constant source of annoyance and pain.

I have for years discarded the old-fashioned but still advocated plan of slitting up the burrows and stuffing the tracks with gauze, and in its stead I have freely dissected out each urinary tunnel until I have found the original "fault" in the urethral wall, for there is usually only one. After cauterising or otherwise treating this, I have brought all the freshly-cut surfaces into careful apposition by salmon gut sutures, and the result in thirty-five severe cases has been decidedly better, more rapidly secured, and in the main more permanently successful than that obtained by the granulation plan. About six cases relapsed, the treatment of the causative stricture having been neglected by the patient; one (a case sent by Dr. Shaw, of Yarmouth) died, but he was decidedly uræmic. Of course it is not suggested that there is any originality in the plastic method, probably many surgeons employ it, though it is not advocated in our text-books.

I obtained, I believe, my first idea of it from noticing Mr. Reeves[3] repair an anal fistula, in 1889.

Reservation Axioms.—(1,) The urinary fistulæ to be treated must be *chronic;* it is obvious that plastic repair cannot be expected in tissues very recently inflamed.

(2,) The accompanying stricture of the urethra must be first efficiently treated by full dilatation or by internal urethotomy. It is a wise plan to secure a free urethra some weeks before attempting plastic repair, for not only is the great constitutional relief at once afforded, but the fistulous channels also become less inflamed, and therefore more amenable when the irritating urine is partially diverted. They even sometimes heal. Thus I operated a year ago upon a man who, for fifteen years, had passed all his water three times a day per rectum, not a drop coming the natural way. The patient immediately obtained complete control by internal urethrotomy, and left the hospital with a dry rectum. I presume the fistulous opening into the rectum was valvular, for I never had to repair it.

(3,) The condition of the urine must be first improved by boric acid, or salol, or hexamethy'entetramine (formin).

Illustrative Cases.

Case 1. *A Perineal Repair.*—A young officer, aged twenty-nine, whose perineum was greatly indurated and undermined, especially on the left side at C (*Fig.* 47). Two fistulous openings existed, A and B

(*Fig.* 47), through the latter of which much urine issued. These orifices were cut open and found to communicate with each other and with the urethra at A′ A″ (*Fig.* 48). A branch tunnel led off from A to C (*Fig.* 48). The walls of these open troughs were now dissected out and stitched up, but the two urethral openings at A′ A″ (*Fig.* 49)

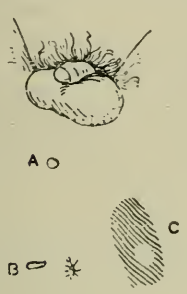

Fig. 47

Fig. 48.

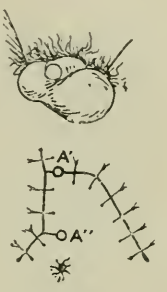

Fig. 49.

were cauterised with the actual cautery and lightly plugged with a fine gauze strip to act as safety valves, the end of each strip being brought out of the stitched wound at points directly opposite the urethral openings, A′ A″. Two soft urethral strictures were fully dilated at the same sitting. He healed fairly well in three weeks,

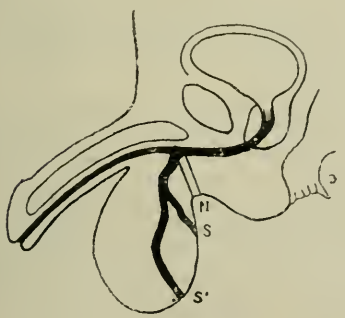

Fig. 50.

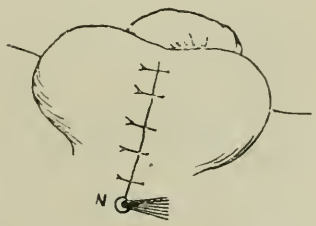

Fig. 51.

and was soundly healed in three months. He wrote me a year afterwards from the West Coast of Africa, as follows :—

"Six months after the operation I walked a distance of two hundred miles from Lagos, and was not a bit the worse for it. I have not had

any fever, and am stronger and fatter than when I came out, so much for Dr. ———'s official opinion, who said I would never be a "fighting factor" again! I am fit enough to fight, ride, and walk anyone else out here."

CASE 2. *Perineo-Scrotal Repair.*—M——, aged forty-four, scrotum riddled with tracks. Two openings existed in middle line (*Fig.* 50 S S'). The perineum was boggy at junction of perineum and scrotum. The scrotum was split along raphé; the fistulous tracks were dissected out; the halves of the scrotum were reunited (*Fig.* 51). The original fault in the urethral tube was found, cauterised, and a safety valve gauze strip brought out from it on to perineum immediately opposite (*Fig.* 51 N). Free internal urethrotomy was performed, and a catheter tied in for twenty-four hours. Sound healing in three weeks.

Remarks.—I treat the "original faults" a little differently now, and I think more successfully. I dissect up, but do not open the last part of the fistulous tube until I feel I am level with its opening into the urethra. This fistulous funnel and the urethra now represent an open T-tube. I apply to the walls of the freed fistulous tube a powerful crushing pile forceps and smash the tube flat right up to the urethral wall, but of course taking care not to pinch the urethra. By this means I not only close the false opening flush with the urethra, but I leave a solid undimpled new floor to the old orifice.

Cases vary very much in the duration of their convalescence. In some the flaps do not unite by first intention, but the final result is the same in healthy subjects—they unite firmly. I prohibit cycling afterwards, unless a special saddle is procured.

The Electrical Treatment of Urethral Stricture.—Wagapow and Siletow[4] consider electrolysis, with proper precautions (using a current of not more than ten milliampères, and not prolonging it beyond ten minutes a sitting), as capable of affording the best results, and under certain circumstances as preferable to urethrotomy. By its rapidity the depression associated with long treatment of genito-urinary diseases is avoided. There is no great liability to recurrence, and its freedom from complications makes it the only possible method in cases where other affections of the urinary apparatus—*e.g.*, diabetes—exist.

REFERENCES.—[1] "Ann. des malad. des org. gen-urin.," Paris, Sept., 1898; [2] "Edin. Med. Journ.," Nov., 1899: [3] "Brit Med. Journ.," vol. i, 1889, p. 917; [4] "Med. Obos.," No. 6, 1897; "Clin. mod.," No. 13, 1898.

URINE (Examination of). *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

It has long been known that phosphates are deficient in the urine of chronic Bright's disease, but Laidlaw[1] seeks to emphasise the importance of this fact by calling it "oligo-phosphaturia," thus taking it under his protection; he does not adduce any additional information respecting it, but he promises to do so, having now staked out his claim.

The tests usually employed for the detection of bile pigment are not satisfactory, as they are neither delicate nor certain. Jolles[2] has suggested the following modification of the iodine test: To 10 c.c. of urine in a test tube add 1 c.c. of chloroform, 5 c.c. of a 10 per cent. solution of barium chloride; shake well and allow to stand for a few minutes. Siphon off the clear fluid, and treat sediment with 2 or 3 c.c. of Hubb's $\frac{N}{100}$ iodine solution, and 1 c.c. of concentrated hydrochloric acid. Shake well and allow to stand. If bile be present the sediment will have a bluish green colour.

The iodine solution is made by dissolving 0·13 grammes of iodine and 0·16 grammes of mercuric chloride in 100 c.c. of alcohol (90 per cent).

Gluzinski[3] suggests the following method: Add to 3 c.c. of urine in a test tube 1 c.c. of formalin, and boil for a few minutes, when a greenish colour results. On adding to some of this a few drops of concentrated hydrochloric acid, an amethy t violet colour is developed.

Bremer[4] says that if a small quantity of gentian violet powder be thrown so as to float upon the surface of normal urine, the fluid remains unaffected in colour, but if diabetic urine be used, in a few seconds it becomes pervaded by a bright blue tint.

REFERENCES.—[1] "Med. Record," Sept 3, 1898; [2] "Med. Press and Circ.," Jan. 10, 1899; [3] "Allg. Wiener. med. Zeitung," 1898; [4] "Med. Press and Circ.," Sept. 28, 1899.

URTICARIA. *T. Colcott Fox, M.B.*

Herbert Skinner, Pharmaceutist to the Great Northern Central Hospital in London, suggests the following formulæ for lotions, for the relief of urticaria:—

℞ Liquor Hamamelidis	fl. ℥ij	Aq. Destillat.	ad Oj
Sal Maris	℥ss		

A benzoic acid lotion:—

℞ Acidi Benzoici (the natural acid rather than the synthetic)	℥ij	Solut. Boracis (1 in 24)	fl. ℥ij
		Spirit. Vini Meth.	ad fl. ℥j

The "Journal de méd. de Paris," of Nov. 13, 1898, strongly recommends drachm doses of **Phosphate of Sodium** every three hours, particularly where there is gastro-intestinal disturbance.

Mahis [1] obtained striking results in a patient with urticaria of the skin and mucosa, dyspnœa, vomiting, and feeble pulse, by **Rectal Injections** of the following :—

℞ Sodium Bicarb.	20 grammes (about 5 drachms)	Wine of Opium	30 drops
		Boiled Water	500 grms. (1 pint)

These injections were made five times daily, and apparently were responsible for the resulting cure.

Lyon [2] gives the following useful summary :—

I.—Treatment of the Cause.

A.—*Urticaria of External Origin* (nettles, caterpillars, bugs, etc.):—
Suppress the cause.

B.—*Urticaria of Internal Cause*, (*a*,) *alimentary* (ingestion of fish, mussels, crayfish, sweetmeats, ices, strawberries, etc.):—

Suppress the cause ; institute temporarily an exclusive milk diet ; employ alkalies ; add to each glass of milk a little Vals or Vichy water, and give sulphate of soda as a purgative saline.

When due to (*b*,) *chronic auto-intoxication* from the digestive tract, consecutive to an old-standing stomach disturbance, to constipation, diet as follows : dry legumes, green legumes and dressed salad, cooked fruits ; milk and lactage. Water or milk diluted with Alet or Evian water at meals. Suppress all fermentable aliments, alcoholic drinks, tea, coffee. Administer at meals one of the following packets :—

℞ Bicarbonate of Soda	20 grs.	Powdered Belladonna Root	0·30 gr.
Magnesia	5 grs.		

Mix and divide in 20 packets.

Combat the constipation by small morning doses of castor-oil, seidlitz powders, podophyllin, rhubarb and magnesia, etc.

(*c*,) In *arthritics* prescribe the carbonate or benzoate of lithia, salicylate of soda, etc. Thermal treatment at Néris, Royat, La Bourboule, Bagnères de Bigorre, Plombières, Wildbad, Schlangenbad.

C.—*Urticaria of Infectious or Toxic Nature :*—
Give quinine where malaria exists.

D.—*Urticaria of Nervous Origin :*—
Warm hydrotherapy ; valerian preparations.

II.—Treatment of Symptoms.

A.—*Internal Treatment:*—

Valerian, ether, acetate of ammonia. Against insomnia trional or sulphonal. Brocq uses the following :—

℞ Bromohyd. or Chlorohyd. of Quinine	0·05 gr.	Ext. of Belladonna	0·002 gr.
Ergotine	0·05 gr.	Excipient and Glycerin	q.s.

Make a pill. Take 8 to 16 daily

Or,

℞ Bromoh. of Quinine	0·05 gr.	Powd. Digitalis Leaves	0·02 gr.
Ext. of Colchicum	0·01 gr.	Excipient and Glycerin	q.s.

Make a pill. Take 2 to 8 daily.

B.—*External Treatment:* –

Baths sometimes do not agree, and the patient on coming out must not be rubbed. Brocq advises very short temperate baths ; starch baths with a litre of vinegar.

Lotions of warm water with a third of vinegar ; decoction of cammomile flowers with a little lead-water ; weak solution of chloral with cherry-laurel-water, etc.

After the application of lotions, powder with equal parts of talc, oxide of zinc, starch and subnitrate of bismuth, to which a little camphor is added.

In some cases pulverisation with the following relieves :—

℞ Chloroform, Camph. Alcohol	āā grs. xxx	Sulphuric Ether Menthol	grs. xxx grs. x

Ointments may be applied over special regions, and followed by a powdering :—

℞ Tartaric Acid	grs. v	Glycerole of Starch	grs. c

Or,

℞ Oxide of Zinc	10 gr.	Vaseline	50 gr.
Essence of Mint	0·50 gr.		

Or,

℞ Phenic Acid	0·50 gr.	Tartaric Acid	1 gr.
Salicylic Acid	0·60 gr.	Glycerin of Starch with neutral Glycerin	30 grs.

In rebellious cases Jacquet's hermetically wadded casing may be tried.

References.—[1] "Sem. méd.," xviii, p. 122 ; [2] "Rev. de thérap. méd. chir.," 1899, p. 326.

UTERUS AND APPENDAGES (Conservative Surgery of the).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

In advocating the adoption of conservative principles in the surgery of the appendages, Martin[1] thus sums up the results of removal of both ovaries :—

(*a*,) The woman becomes absolutely sterile.

(*b*,) Menstruation ceases in about 95 per cent. of the cases.

(*c*,) The uterus, and, to a less extent, the vagina and vulva undergo a process of atrophy.

(*d*,) The nervous symptoms of the menopause appear abruptly and violently, namely, heats and flushes, perspirations, palpitations, giddiness, depression of spirits, and a generally unstable condition of the nervous system.

(*e*,) In a considerable majority of cases there is a diminution or total abolition of the sexual instincts.

(*f*,) The patient has a tendency to obesity.

If one ovary, or even only a portion of one ovary, be left behind, none of these symptoms appear. There is physiologically no difference between a woman with half an ovary and a woman with two ovaries, while there is a great difference between a woman with half an ovary and a woman with none. It is remarkable how small a fragment of ovarian tissue is necessary to preserve the full influence of the gland on the body.

In the case of sarcoma of one ovary, Martin advocates the removal of both, on account of the great tendency of sarcoma to affect first one ovary and then the other, but in cases of ordinary cystoma of one ovary, the other being healthy, he holds that it is unjustifiable to remove both.

In cases of double pyosalpinx it is his custom to perform vaginal hysterectomy, and at the same time to remove the diseased tubes. In such cases he always endeavours to leave behind one or both ovaries, unless they are obviously diseased.

For fibroma, dermoid and cystic disease of the ovary he performs resection of the diseased portion when this is possible ; for chronic and cystic ovaritis he recommends ignipuncture. In dealing with parovarian and broad ligament cysts it is often possible to preserve the ovary on the affected side ; and Martin holds that this should always be done.

With regard to operations for fibromyoma, Martin points out that if the uterus be completely removed, of course the patient becomes sterile and menstruation ceases ; but if at the same time one or both ovaries be left behind, the nervous symptoms of the menopause are

slight and often entirely absent. If, however, both ovaries be removed with the uterus, they appear. Patients who have had the uterus removed as well as the appendages suffer from climacteric troubles less severely than do those who have had the appendages alone removed. In some mysterious fashion the uterus (bereft of its appendages) is a source of disturbance to the woman's nervous system. Martin has come to the conclusion that if both ovaries and tubes have, for any reason, to be removed, it is better at the same time to remove the uterus; on the other hand, if the uterus has to be removed we should endeavour to preserve one or both ovaries.

Stinson[2] writes on similar lines, and considers that in deciding on an operation for the removal of an ovarian cyst or uterine fibroid, etc., we should proceed upon those lines by which the cyst or tumour can be extirpated without sacrificing the ovary or uterus. Until recently oöphorectomy and hysterectomy were performed. He believes that where it is possible we should avoid removing the uterus or any portion of ovarian tissue which appears normal, even though the portion of ovary remaining be small. Resection and plastic operations should be practised when pregnancy is liable to occur and delivery at term can be conducted with safety. We should endeavour to cure our patients without depriving them of their menstrual function, as sometimes the symptoms that follow hysterectomy or double oöphorectomy are more taxing than those which were present before the operation was performed.

There is no doubt that conservative surgery may be carried too far; and Coe[3] points out some of its disadvantages. He says that the simplest form of conservative treatment consists in separating the adhesions around tubes and ovaries which present few if any macroscopic evidences of disease. This is, undoubtedly, a most valuable procedure, since these adhesions are often the cause of abdominal pains entirely out of proportion to the local lesion. The writer's experience is certainly not different from that of his readers when he says that, while many of these patients have been greatly benefited as regards the relief of both dysmenorrhœa and persistent pains, the adhesions have often reformed.

With regard to the puncture or excision of small cysts on the surface of the ovary, he reminds us that in spite of the amount of honest work which has been expended on the histology of the ovary, we are not yet in a position to define strictly the limits between normal and pathological cirrhosis in the stroma. Doubtless in the hasty inspection at the operating-table corpora fibrosa are frequently mistaken for inflammatory thickening. This being the case, how do we know, when

we puncture or excise a cyst, or an area of supposed cicatricial tissue in the ovary, that we are really doing the patient a service by removing a pathological condition? That she becomes pregnant afterward is hardly a proof that the operation was a direct cause of pregnancy.

It has been assumed by those who have written on this subject that the risks in ovarian and tubal resection are practically *nil*, but Coe records a case in the practice of an eminent surgeon in which secondary hæmorrhage followed the excision of a follicular cyst *per vaginam*. It was necessary to open the patient's abdomen several hours after the operation in order to check the bleeding.

The variations in menstruation noted when a portion of the ovary, including from one-fourth to two-thirds of the normal stroma, was left behind have been many. In two instances menstruation, after returning slightly two or three times, ceased entirely. In other cases the flow was slight and irregular, but persistent; in two more profuse than before, and attended by pain several days before and during the flow. In Coe's experience the relief of dysmenorrhœa has been gradual rather than immediate.

This result is hardly surprising in view of the fact that the portion of the ovary which remains has been known to atrophy entirely or to undergo cystic degeneration.

He sums up the question in the following conclusions:—

(1,) Conservative operations on the adnexa are to be commended in properly selected cases. The surgeon should avoid, on the one hand, tampering with ovaries that are the seat of slight cystic degeneration or cirrhosis, and, on the other, trying to preserve supposed normal tissue in organs which show such extensive disease that it is doubtful whether the best interests of the patient (both immediate and remote) would not be served by complete removal. In many cases it is advisable to simply separate adhesions. As there is no way of preventing their reformation, it is better to suture prolapsed tubes and ovaries at their normal level in the pelvis.

(2,) In a certain proportion of cases resected ovaries undergo complete atrophy; in others the stromal remains may form the starting-point of cysts, requiring a second operation for their removal. A tube which has been rendered patent by dissection may again become occluded, or may form a hydrosalpinx or tubo-ovarian cyst.

These are often entirely satisfactory as regards the relief from pain and dysmenorrhœa, the preservation of the functions of ovulation, and the occurrence of conception. *Per contra*, constant pain and dysmenorrhœa may persist, menstruation may be absent, scanty, or

excessive, and pregnancy is so far the exception that it is to be regarded as an unusually fortunate sequence.

REFERENCES.—[1] "Brit. Med. Journ.," Sept., 1898; [2] "Therap. Gaz.," Dec., 15, 1898; [3] "Med. News," Sept. 24, 1898.

UTERUS (Cancer of).

Thomas More-Madden, M.D., F.R.C.S.Ed., Dublin.

In a branch of surgical science undergoing such rapid development as gynæcology, the occasional re-discussion of questions connected with its practice becomes unavoidable. Especially does this appear to be the case at the present time with regard to uterine cancer, the increasing prevalence of which has been strikingly apparent of late years, whilst its treatment is still largely debatable. Hence, although I have brought this subject under consideration elsewhere, I venture to submit here the following summary of a somewhat extended clinical experience of the various curative and palliative measures now available in cases of malignant disease of the uterus.

Of such instances more than a hundred have come under observation in my wards in the Mater Misericordiæ Hospital, Dublin, where the proportion of uterine cancer has now risen to more than 3 per cent. of all the gynæcological cases. In the majority of these the disease originated in the cicatricial tissues consequent on parturient lacerations, and apparently remained localised therein for a sufficient time to enable its timely diagnosis, and frequently its effectual curative treatment by the early removal of the affected parts. Thus of fifty-four of the cases of this kind of which I have a sufficient history, in forty-seven the disease commenced in the cervix; thirty-seven of these patients being multipara, and only fifteen nullipara or unmarried women. Whilst the influence of age as a predisposing factor in such cases was sufficiently shown by thirty-seven cases in women between forty and fifty years of age, in ten cases beyond forty, and in only eight under that age.

I have already observed that in the large proportion of these cases the disease originated and apparently for a time remained localised within the cervix: hence the vital importance of early recognition. This may, I think, be generally accomplished before the occurrence of any of its commonly described objective symptoms such as pain, hæmorrhage, or fœtid discharge, by careful local examination in all cervical lesions, especially in those traceable to parturient lacerations and by subsequent microscopic investigation. If such examination be thus made, the margin of the os uteri will generally be found hard, and often red, and, in the situation of the muciparous glands, small and distinctly defined projections somewhat like grains of shot under the mucous

membrane are felt, pressure on which causes pain and nausea. The circumference of the os feels indurated or turgid and is of a deep crimson colour, or, if eroded, presents some slightly projecting points which bleed readily. These nodules when excised, show microscopically malignant characteristics, and therefore the curette should be used in every case where any possibility of cancerous or adenomatous disease may exist.

TREATMENT.—*Hysterectomy.*—In the modern treatment of uterine cancer too exclusive attention is given to hysterectomy as a curative procedure in contradistinction to early amputation of the cancerous cervix, although, as it appears to me, the grounds for that preference have yet to be established. In so saying, I, however, of course fully recognise, and in my own practice act on the fact that, in some instances where the disease has distinctly originated in the fundus or body of the uterus, or as a palliative measure, in some advanced cases of uterine cancer hysterectomy may be an unavoidable necessity.

Nor can anyone for a moment question that the immediate mortality of hysterectomy operations, more especially by the vaginal procedure, has now been reduced to a very small proportion of the cases operated on. None the less do I still maintain that these successful immediate results in no way represent the ultimate or curative consequences so obtained, and that they afford no ground *per se* for the adoption of those operations, as a general rule of practice in all cases of malignant disease of the uterus.

We have superabundance of statistics to show in how many cases of uterine carcinoma hysterectomy has been performed, and in how large a proportion of cases the patients were discharged apparently convalescent from hospital a short time afterwards. Such statistics, however, can hardly be accepted as proof that the patients in question were cured by the operation, or even that they lived longer than would otherwise have been the case unless this be distinctly shown. The accuracy of results published of patients considered cured a few months, or even a year or two, after hysterectomy, is in no way affected by the refusal to accept the conclusions as to the ultimate effects thus arrived at. For if in such statistics be included, as is probably the case, the majority of instances of uterine cancer, viz., those in which the disease is located in the cervix, there need be no marvel in the present advanced stage of intra-peritoneal and pelvic surgery, at the results so obtained. And I still venture to think that no less beneficial consequences, to say the least of it, might possibly, as already shown, have been obtained with lesser risk by the timely removal of the affected cervix. But if, on the other hand, they refer

to cases in which the upper regions of the uterus were extensively implicated by cancer, I must only confess my incompetence to realise how structures of such intense vascularity and intimate connection with lymphatic plexuses emptying into the vessels of the broad ligaments, as the fundus and body of the uterus, can long be the seat of cancerous changes without almost inevitable extension of the disease beyond the possibility of capture by the surgeon's knife.

Hence, under such circumstances, the ultimately successful or curative results of hysterectomy must, I fear, be regarded as largely fortuitous and exceptional, although in some cases the fatal issue may thus be staved off for a time.

Any extension of life and immediate relief from suffering are obviously justification of whatever measures may afford the best chance of such results. On these grounds, therefore, and merely as a palliative, I have resorted to hysterectomy in a few of the many cases of advanced carcinoma affecting the upper portions of the uterus that I have seen within the long period referred to, and in only one of these was the patient apparently free from any recurrence of the disease at the expiration of two and a half years after the operation.

Results of the Early Removal of the Cancerous Cervix.—With regard to the immediate consequences of cervical removal for cancer I can speak with some certainty from my own experience, having so far seen no mortality whatever directly consequent on this operation. Whilst as to the subsequent recurrence of the disease in the uterus or elsewhere I may again mention that out of thirty-one cases in which I amputated the cervix for cancer or supposed cancer, and was able to trace the result, in one instance the disease returned to the uterus within four months, in five cases it returned there or elsewhere within a year, in two cases within two years, and in one within three years, and in one case the patient came back four years after discharge from hospital with labial cancer. On the other hand, in ten cases there was no return of cancer within four years, and some patients I operated on more than ten years ago have since remained free from it. In five other cases the information procurable was limited to two years and in six cases to one year after the operation, and indicated no recurrence of the disease within those periods.

These results may, I venture to think, be favourably contrasted with those obtained by the probably bolder but not necessarily more successful surgeons, who unhesitatingly and as a general rule advocate and practise the complete removal of the uterus in every case of carcinoma localised in any part of that organ. I may, therefore, repeat that, as I have elsewhere shown, the immediate mortality of

the amputation of the cancerous cervix in my cases was nil. Moreover, of the patients so operated on two-thirds were apparently free from cancer at the end of the subsequent periods referred to, and as far as I know have since continued without recurrence of the disease.

The method of amputating the cancerous cervix which was followed in these instances is somewhat different from that more generally adopted, and should, perhaps, be here briefly referred to. With the exception of some instances in which either supra-vaginal amputation or the vaginal flap operation with the knife was resorted to, in the great majority of cases I have relied on the infra-vaginal removal of the primarily affected neck of the womb, either by the steel wire écraseur or by thermo-cautery. But before this was done I invariably, in the former instance, transfixed the cervix above the supposed limits of disease by a steel wire ligature, so as to prevent retraction of the divided part, and to allow of its being drawn down for that subsequent thorough and deep cauterisation with the actual cautery of the stump, which, when the thermo-cautery had not been used for its separation, is, I think, always essential, and frequently successful in preventing recurrence of cancer in the dense fibrous cicatricial tissues thus left. It need hardly be added that the necessary measures were taken to secure patency of the uterine orifices in these cases.

Non-Operative Treatment.—Believing, as I still do, in my formerly expressed opinion that once this disease has extended upwards so as to implicate the superior uterine zone and its glandular connections, or where it has originated in or largely affected the fundus or body of the uterus, any treatment must, as a general rule, be regarded as merely palliative ; I cannot here omit some reference to the modern methods by which life may be prolonged, or symptoms be mitigated, and pain allayed in inoperable cases of this kind, although in so doing I must perforce reiterate my experience of the methods now available for these purposes.

Electrolysis.—As alternatives to the older escharotics, the galvano-cautery or the negative electric current was tried in several cases of carcinoma in my wards by one or other of the various methods suggested by Drs. Apostoli, of Paris, Byrne, of Brooklyn, and Parsons, of the Chelsea Hospital. The effects, according to the latter authority, produced by the passage of the current directly through the cancerous structure consist of a cessation of growth, gradual subsidence of pain, shrinking and hardening of the tumour, followed by improved nutrition and improvement of constitutional condition. In a few cases in which I endeavoured to follow the directions published for the latter pro-

cedure, some benefit was for a time evinced ; but, possibly from inexperience or insufficiency of perseverance, I was not myself enabled to secure the more marked and permanently good results hoped for from this practice.

Actual Cautery.—In a few instances of advanced cervical cancer with considerable discharge and hæmorrhage, I destroyed the diseased surface by deep cauterisation with the actual cautery as a local palliative. In one instance the eschar sloughed out, leaving a cleaner and comparatively healthy-looking small ulcerated surface. In this case the cauterisation afforded marked relief from pain, hæmorrhage, and discharge, as long as the patient remained under observation. In other cases no benefit was produced.

Potential Cautery.—In some cases where the disease is beyond removal by operation, or where it is returning in the cicatrix after operation, or where by the destruction for a time of the cancerous tissues we can hope to afford relief from pain, discharge or hæmorrhage, and so prolong life and render death more easy, escharotics may be usefully employed. Of those which I have myself thus tried, including nitric and chromic acids, acid nitrate of mercury, ethylate of sodium, and chloride of zinc, I have found the last the most effective, safest, and least painful. In more than one instance of cancerous disease of the fundus or body of the uterus, even when the patient's strength was greatly exhausted by the accompanying hæmorrhage and fœtid discharge and pain, I have apparently assisted in prolonging life for a considerable time, and in relieving the symptoms by thoroughly curetting away as far as possible the cancerous structures and freely cauterising the parts with chloride of zinc.

Celandine or Swallow Wort.—This very old remedy, having been again recently re-introduced into practice in the treatment of cancer cases, was employed in several cases of malignant disease of the uterus in my wards. In three of these, in which the celandine extract was locally applied and administered internally, the condition of the cancerous ulceration was rapidly and distinctly improved for a time ; in two no change was produced, but in none of them was any permanent curative effect produced.

Local Injections of Absolute Alcohol, as recommended by Schultz were employed in some of my inoperable cases of cervical cancer. In one of these the first injection of alcohol was followed by such local pain and constitutional disturbance as to prevent its repetition. In two other cases similar but deeper parenchymatous injections, repeated at intervals of two or three days, were attended with some diminution in the amount and fœtor of the discharge, and apparent shrinkage in the

diseased structure. In neither of these cases, however, did the patient remain sufficiently long under observation to warrant any conclusion as to the probable duration of these effects.

Methylene Blue.—Several years ago I called attention to the value of this agent as a local analgesic in pruritus and other gynæcological cases, and since then I have frequently employed it in this way and by internal administration to relieve the pain of uterine cancer. In cases of inoperable cervical carcinoma a pledget of sterilised gauze saturated in a 5 per cent. solution of methylene blue will occasionally not only allay pain but also cleanse and temporarily improve the condition of the part ; whilst the injection of a similar solution by the needle into the substance of a medullary growth may for a time cause some diminution of its size and abatement in the amount and fœtor of the discharge.

Deodorisation of Cancerous Discharge.—In many cases patients in an advanced stage of uterine cancer suffer from the fœtor of the vaginal discharge as much as from the accompanying pain or hæmorrhage. The mitigation of this source of discomfort is therefore a matter of great practical importance. Mere syringing with warm water is, *per se*, almost useless for this purpose, whilst some of the deodorants occasionally recommended, such as iodoform and ichthyol suppositories, are only less offensive in their own odour than the discharge, the fœtidity of which they are designed to mask. Nor is the desired object sufficiently effected by antiseptic solutions of izal, carbolic or boric acid, etc., etc. Of such agents one of the most effective is **Peroxide of Hydrogen**, which, even for some hours after its use, leaves the patient free from this horrible addition to her miseries. But as the cost of this agent is a bar to its general use by hospital patients, in such cases we may be enabled to overcome the characteristic smell of cancerous vaginal discharges almost as effectively by the use of one or other of the cheaper deodorants, viz., firstly, **Chlorate of Sodium**, in the proportion of a couple of drachms to a quart of hot water ; or, secondly, by a 1 per cent. solution of **Formalin**; or, thirdly, by the use of **Turpentine.** The latter can be employed by putting half an ounce of pure turpentine, stirred into a creamy consistency, with a spoonful of magnesia, into a quart of boiling water, and then pumping the mixture with a syringe from one vessel into another until the temperature be reduced to blood heat, when the turpentine—being at the same time thus mechanically sub-divided—will remain diffused through the fluid for a sufficient time to allow the vaginal passage to be washed out before the oil comes together again. No deodorant or styptic application in general use appears to afford more distinct

respite from the fœtor as well as hæmorrhage of cancerous uterine discharge than this. In some cases very similar effects can be produced by applying a small tampon saturated in a mixture of pure **Terebene** and **Glycerin** to the cancerous surface, where it may be left *in situ* for several hours.

Relief of Pain in Inoperable cases of Uterine Cancer.—This, in the large proportion of such instances unfortunately still remains our chief function. Although I have found none of the newer hypnotics or analgesics, with the exception perhaps of orthoform, so effective in the pain of uterine cancer as the older fashioned preparations of **Opium,** such as Battley and the acetum opii, I would, nevertheless, venture to deprecate their too frequent exhibition. In the advanced stage of uterine cancer, when from the extension of the disease, more especially to the bladder or ureters, sedatives are most likely to be required, opiates or morphia cannot be habitually used without such increase in their dosage as to derange the digestive functions and the nervous system, and thus probably accelerate the fatal issue. Moreover, under these circumstances, I have noticed a special intolerance of morphia, and have seen what, under ordinary conditions, would have been a perfectly safe hypodermic injection of this agent followed by that "sleep which knows no waking." Hence in the cases referred to we have in the hospital as a rule endeavoured and generally succeeded in affording sufficient sleep and mitigation of pain by ringing the changes in succession on the various old and new sedatives as each in turn lose their effect. Amongst those thus employed were the **Bromides of Potassium** and **Sodium, Trional, Chloral, Sulphonal, Belladonna, Conium,** and, lastly, the newest and probably one of the most effective pain allayers in uterine cancer cases, viz., **Orthoform,** on the general safety of which, however, in such cases, some apparently well founded doubt has been thrown by recent casualties.

REFERENCES.—[1] "Brit. Med. Journ.," Oct. 14, 1899, and "Dublin Journ. Med. Sci.," May, 1899.

UTERUS (Displacements of the).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Preventive Treatment.—According to Abel[1] retroflexion and version can to a large extent be prevented by proper care of the puerperal woman. He quotes Winter to the effect that this condition is present in 12 per cent. of primiparæ. The critical period is the beginning of the second week, when the degeneration of the muscular fibres has advanced and before the connective tissue has regained its elasticity.

The writer criticises the custom of allowing patients to use the commode on the fourth day after delivery. On the other hand, he does not agree with Schatz that it is desirable to keep them in bed for two or three weeks until the pelvic floor regains its tone. Every puerperal woman should be examined in order to determine if her uterus is in its normal position. Gottschalk advises the use of a **Pessary** as early as the seventh day after delivery if there is a tendency to retrodisplacement, the patient being kept in bed three or four weeks. If a pessary is introduced it should be as small as possible, in order not to cause overstretching of the vagina. He would have the patient lie on her side as much as possible and empty her bladder every four hours.

Treatment by Pessaries.—The rules to be observed when pessaries are used are thus tersely summed up by Goelet:[2] Never use a pessary except as a temporary or auxiliary support. Never permit a patient wearing a pessary to pass from under observation. Never retain a pessary if it is causing the least discomfort. Daily vaginal douches are necessary. Never introduce a pessary unless the uterus is freely movable and can be replaced by manipulation. Never fail to seek the cause of the misplacement and endeavour to remove it. The pessary alone will not cure.

With regard to douching, Montgomery[3] points out that it is extremely important to induce the patient to realise that astringent injections should be avoided, as they lead to the deposition of salts upon the pessary, which roughen its surface, increase the irritation and lead to further abrasion and ulceration of the vagina.

Surgical Treatment.—Pessaries are, of course, at best only palliative; and the adoption of more radical procedures appears to be becoming more widespread. No new surgical method has been introduced of late, those adopted being *ventro-fixation*, *vagino-fixation* and *shortening of the round ligaments*. Vagino-fixation seems to be less popular than it was a short time back, but still finds advocates. One of its principal drawbacks is the risk of complications when it is followed by conception. Richelot,[4] while recommending it, recognises all the accidents during pregnancy and at term following vagino-fixation, but says that they are the result of bad technique. In order to avoid them, it is necessary to place the sutures exclusively upon the anterior surface of the uterus and below the tubular orifices. As, during pregnancy, the uterus develops especially at the fundus, it is essential that the fundus should always be left free. These remarks are equally applicable to ventro-fixation.

Retroversion of the Gravid Uterus.—In cases of incarcerated retroversion of the gravid uterus, when all attemps at replacement *per*

vaginam have failed, Mann[5] recommends that instead of inducing labour, abdominal section should be performed, and the fundus pulled up by the hand introduced behind it. He holds that if the uterus completely fills the pelvis, attempts at replacement from below must fail, not because the uterus is too large to be forced through the pelvic brim, but, filling as it does the pelvic cavity, when it is pushed up nothing can enter from above to take its place; and the moment the the hand is removed from below, atmospheric pressure forces the uterus down into its former position. Even if the uterus be soft and yielding, considerable manipulation is required to get it up, and this can only be accomplished by allowing air to get in behind it. In addition, if adhesions be present, these must be broken down before reposition can take place, and this can only be done by operation. He illustrates his article by two cases, in both of which, after several attempts had been made at reduction *per vaginam*, unsuccessfully, the abdomen was opened, and the incarcerated uterus, with considerable difficulty, lifted out of the pelvis. Both patients recovered; one had a natural labour at full time, the other was lost sight of. Similar successful cases have been reported by other observers.

REFERENCES.—[1] "Centralb. f. Gyn.," 1898, No. 30; [2] "Virginia Med. Semi-monthly," Aug., 1898; [3] "Internat. Med. Mag.," Mar., 1899; [4] "Gaz. méd. de Paris," 1898; [5] "Amer. Journ. of Obst.," July, 1898.

VARICELLA (Incubation Period).

Henry Dwight Chapin, M.D., New York.

Dr. Wm. Sykes[1] found the period of incubation of six cases of chicken-pox that he studied to be from six to nineteen days. It is probable that the period of incubation of this kind of disease is not a fixed quantity, but varies widely within certain limits; thus, while we may take fourteen days as the average period, we have no great difficulty in accepting Tanner's four days or Trousseau's twenty-five days as outside limits in different directions to which the incubatory period may in certain instances attain. It is interesting to note that all the older writers give much shorter periods of incubation in chicken-pox than the more modern ones.

REFERENCE.—[1] "Brit. Med. Journ.," No. 1985, 1899.

VARICOSE ULCERS. (See "Ulcers.")

VEINS (Diseases of). *Priestley Leech, M.D., F.R.C.S.*

Varicose Veins.—Bennett,[1] in an interesting paper on this subject, divides varicose veins from the point of causation into four classes: (*a*,) Congenital; (*b*,) Due to obstruction of blood current; (*c*,) Those

caused by strain without thrombosis ; (*d*,) Those the result of thrombosis.

(*a*,) *Congenital Cases.*—Heredity is a considerable factor (mainly on the father's side). They may be divided into two classes : (1,) Those connected with the subcutaneous veins only ; (2,) Those having a direct and gross communication with the deep venous trunks. A third variety of congenital varix is where the whole venous apparatus of a limb is over-developed, with or without corresponding increase in the size of the main artery. As an example of the first variety is the mass of varix often seen in the calf of the leg ; of the second variety (the most important), an example is seen in the convoluted collection of varicose veins about the inner side of the knee, which turning towards the middle of the popliteal region, ends in a large vessel which joins the deep vein directly by passing through the normal opening in the fascia over the popliteal space.

(*b*,) Cases due to obstruction of the blood current by external or internal pressure. Examples of this type are seen in varix in successive pregnancies, or by pressure of tumours. If the pressure is transient, the dilatation may permanently subside ; if the tension causes the valves to give way, or an aseptic thrombus forms immediately below the seat of pressure, permanant varicosity results.

(*c*,) Cases caused by strain. In persons who are subjected to abnormal and especially sudden strain, as in hard training, gymnastics, football playing, etc. Bennett says the explanation of these is the giving way of the vein valves—usually the proximal pair. In these cases something may be felt to have given way in the thigh, and a soft bruit can often be heard though no pressure be placed on the vein. Varicosity from occupations which involve long standing is included in this category ; the strain is slight but long continued, and there is some reason to believe it only occurs in subjects whose veins are in some way defective, congenitally, from previous traumatism or from pathological change.

(*d*,) Thrombosis as a cause of varix. Varicosity from thrombosis of the large venous trunks (*e.g.*, the iliac vein) is well known, but as a result of thrombosis of the main deep veins of the leg is not so well known, and is not mentioned in surgical literature. Strains and other similar injuries of the leg and ankle followed by pain and acute tenderness down the middle of the leg, causing momentary trouble and rendering the limb practically useless for a considerable time, are not infrequently followed very soon by dilatation of the saphena veins, which, if more than very temporary, passes on to tortuosity and development of the characteristic varicosity which rarely extends

above the knee, terminating generally at the point at which the great saphena of the thigh is completed by the junction of the two trunks at the upper end of the leg. The cause of this development is thrombosis of the venæ comites of the posterior tibial artery ; the primary saphenal dilatation is the result of the establishment of the collateral circulation. If the thrombus clears up, or if the unaffected deep veins take up the collateral circulation, this dilatation is temporary only and soon disappears; if the thrombosis is permanent the saphenal dilatation also becomes permanent.

The author further says that there are certain well-defined types of varicosity which afford an ever-present source of danger which, if the condition be recognised, is easily obviated by removal of the veins concerned. Thrombosis in varicose veins is just as important as thrombosis in a normal vein ; if it occurs below the knee serious results in absence of gross neglect seldom occur, but at the knee and in the thigh a recent clot in varicose veins is always a serious and sometimes a fatal lesion ; in certain types of varix the gravity of thrombosis cannot be over-estimated.

The local conditions predisposing to thrombosis are : (*a*,) Cysts or acute bends in greatly dilated vessels ; (*b*,) Peculiarity of situation with regard to mobility ; (*c*,) Liability to injury.

The tendency of thrombosis in varix to spread and invade the great deep venous channels increases with the size of the vein, the absence or inadequacy of the vein valves and especially with the existence of a gross lateral communication between the part in which the clotting occurs and the main deep venous channel nearest in relation to it ; the liability to embolism will of necessity be increased by the same conditions. The dangerous region in varix (*i.e.*, dangerous to life or limb) is a portion of the inner half of the circumference of the lower limb marked off by two transverse lines, one about the middle of the thigh, and another three inches below the line of the knee-joint at the point where the two main subcutaneous veins of the inner side of the leg join to form the main femoral trunk of the internal saphena. He describes eight distinct types of varix in this region.

Treatment.—As regards treatment in the early stage, especially if œdema is present, **Massage** is useful ; it should be avoided if cysts are present, or where indications of recent thrombosis are present. **Moderate Exercise,** in absence of recent thrombosis, is beneficial ; excessive exercise and strain, and especially standing for a long time in one position, are bad. In all cases **Rest** in the recumbent position with the legs raised for an hour or so in the afternoon is advantageous.

Nothing roduces so much harm as the routine wearing of elastic supports, whether bandages or stockings, and this is more especially true of varix of the thigh ; the author has seen four cases of grave thrombosis produced by ill-fitting appliances. In uncomplicated cases of varix of the thigh no support extending beyond the upper limit of the leg ; in certain cases of œdema of the whole lower limb **Elastic Support** throughout may be indicated, but the thigh piece should be separate from the leg piece. Where the valves are natural and the functional properties perfect, although the veins are abnormal in size, no support is needed ; this is often the condition in varix accidentally discovered about puberty or at twenty or so. Varix arising after deep thrombosis from injury requires elastic support with massage after the tenderness has disappeared, and often a cure results. Operative treatment as a cure is often disappointing, mainly because too much is expected, and suitable cases are not treated. If the varix has involved the saphena in the thigh no operative treatment is likely to enable the patient to dispense entirely with some elastic support. Operation in uncomplicated varix is to be regarded as a measure for the prevention of certain complications and as a check to the progress of the disease. From the point of view of operation, varix of the lower limbs may be divided into two classes : local, with well-defined limits ; and general, the long saphena being considerably implicated. Local masses of varix, which are always congenital, in persons of active habits, should be removed, especially if situated in positions liable to injury, or if a communication with the deep veins is suspected, in consequence of the dangers of thrombosis under these circumstances ; isolated cysts or dilatations should be removed for the same reasons. Cases of more or less general varix are of two kinds ; one in which the disease is confined to the leg, and, generally speaking, operation here is useless and sometimes harmful ; the other in which it affects the thigh, the saphena being grossly involved.

Bennett's practice is to remove a length of the saphena vein, extending from the point below the knee at which the two venous trunks from the leg join to a point a little above the lowest third of the thigh ; operative measures confined to the parts below the knee in general varix are useless. A thin, tortuous, dilated vein passing obliquely across the skin calls for removal, especially in footballers, as it may be the starting point of extensive thrombosis from injury or of considerable subcutaneous hæmorrhage. Operation on varix the result of thrombosis is unjustifiable, if the veins are concerned in the carrying on of the collateral circulation. In creeping thrombosis of the saphena he advocates ligature of the saphena on the proximal side of the clot

to arrest its progress. As regards thrombosis in varix the patient's best interests are consulted by removing the thrombosed portion with the whole of the contained clot ; in cysts and local masses of varix, where there is reason to suspect communication with the deep veins, this treatment is peculiarly appropriate. In cases of thrombosis of varix where there is a tendency to repeated detachments of emboli, ligature of the path by which the emboli reach the general circulation, or removal of the source of the emboli, is indicated, and may save life.

Pearce Gould,[2] in an analysis of fifty cases of varicose veins on which he has operated, comes to the following conclusions : To ensure success the long saphena vein must be obliterated very close below its entrance into the femoral vein. This operation is very satisfactory in its immediate and late results, and where Trendelenburg's symptom is well marked may be confidently relied upon to relieve the patient's symptoms and lead to a permanent shrinking or obliteration of the varicose veins. (Trendelenburg's symptom is this : If the patient is recumbent and the leg be raised so as to empty the varicose veins and pressure is made over the internal saphena vein above the varices, when the patient stands up the varices do not fill out as before as long as the pressure is maintained.) A striking point is that the pain is relieved ; in some the effect of the operation is more marked on the pain than on the varices.

Ligature or excision of the saphena at some distance below the groin is uncertain ; in some cases it relieves, in others it fails to relieve. He also recommends the excision of thrombosed varices in suitable cases.

REFERENCES.—[1] "Lancet," Oct. 15, 1898 ; [2] Ibid., April 8, 1899, p. 941.

VERRUCA. *C. F. Marshall, M.D., B.Sc., F.R.C.S.*

Contagiousness of Venereal Warts. Venereal warts are generally stated to be due to : (1,) Irritation of gonorrhœal and other discharges ; (2,) Neglected condylomata. Cathcart, however, considers that venereal warts are contagious in themselves, and independent of local irritation or syphilis.

The author concludes that warts are true tumours, and sums up as follows : (1,) Warts may exist without any irritating cause ; (2,) Warts may spread to the mucous membrane of the urethra and anus, where there are no papillæ of the skin : (3,) Local irritation and discharges may exist indefinitely without causing warts ; (4,) Warts may occur soon after connection without the possibility of long con-

tinued irritation ; (5,) The overgrowth of papillæ and the warty condition of the skin near the urinary fistulæ, and callous ulcers, are not true warts ; (6,) Warts differ from condylomata in their mode of growth. The condyloma is mainly an overgrowth of connective tissue to which an epithelial covering is added. The wart is essentially an epithelial growth.

REFERENCE.—"Journ. of Path. and Bacteriol.," July, 1897.

VERTIGO (Nasal). (See "Nose.")

VISION (Defects of). *F. Richardson Cross, M.B., F.R.C.S.*

Maddox[1] describes instruments for determining exactly the axes of cylinder lenses in spectacles. One of them was devised by himself, and consists of a graduated semicircle of metal, the diameter of which is formed by a horizontal bar upon which the glasses rest (*Fig.* 52). From the centre of the semicircle is suspended

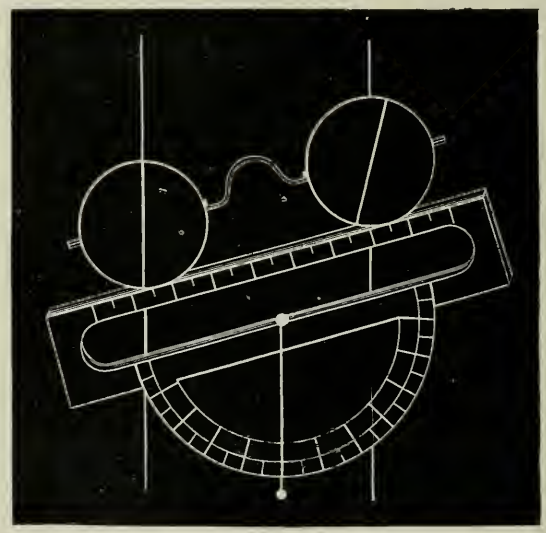

Fig. 52.

a weighted thread. In order to measure the position of the axis of the cylinder, the horizontal bar with the attached spectacle frames is tilted until the axis of the cylinder lies parallel to a vertical line in the room. The tilt of the instrument is recorded by the position of the

thread on the graduated semicircle, and corresponds to the axis of the lens.

The other (*Fig.* 53) is a modification by Mr. Gradon, of Oxford, of a former instrument of his own in accordance with Mr. Maddox' suggestions. In this instrument the semicircle (*A*) is fixed to the side of

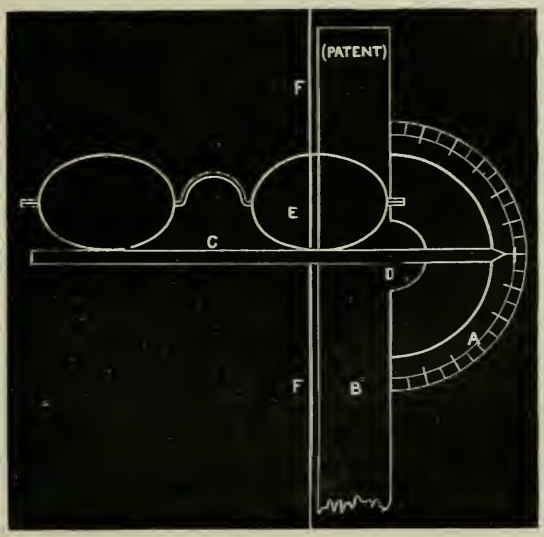

Fig. 53.

a vertical upright (*B*), which corresponds to its diameter. The spectacles to be tested rest upon a movable bar (*C*), which rotates around a point (*D*) corresponding to the centre of radius of the semicircle. The bar is tilted until the axis of the cylinder (*E*) is parallel to some selected vertical line (*F*) in the room, when the position of the axis is indicated upon the semicircle by a prolongation of the bar towards it.

REFERENCE.—[1] "Ophth. Rev.," Jan., 1899.

VOICE (Affections of). (See "Larynx.")

VOLVULUS. (See "Intestine, Surgery of.")

XEROSTOMIA. *W. Milligan, M.D.*

This rare and peculiar affection, first described by Hutchinson and Hadden in 1888, derives its importance more from the question of its etiology than from any therapeutic interest.

Harris[1] reports a case in which there existed enlargement of both parotid glands with an entire absence of pain or even tenderness. In addition to an arrest of secretion from all the buccal glands there was an associated slight dryness of the nasal mucosa, and both taste and smell were interfered with.

Sharp[2] also reports a case in which, however, no enlargement of the parotid glands and no affection of taste or smell was present, merely a marked dryness and glazing of the whole of the buccal mucosa. With regard to treatment, nothing which has so far been suggested appears to afford relief.

REFERENCES.—[1] "Amer. Journ. Med. Sci.," March, 1898; [2] "Lancet," April 23, 1898.

X-RAYS. (See p. 61, and under "Bladder," "Larynx," and "Nose.")

YAWS (Framboesia). *C. F. Marshall, M.D., F.R.C.S.*

This is a disease of tropical climates, occurring chiefly in Africa, Hindustan, or the West Indies. There is an incubation period of several weeks; a secondary period with febrile symptoms, and an eruption coming out in several crops and lasting several months; a period of sequelæ, which may last several years. The characteristic eruption commences as papules, which enlarge and split, resulting in small growths resembling a raspberry. Some of these may coalesce, forming irregular masses. The growths excrete a foul discharge, which forms rupia-like crusts as they enlarge. On the mucous membrane they resemble mucous tubercles. As a rule the disease tends to recovery, but relapses are common. It is contagious, and due to a specific virus, although the micro-organism has not yet been found. The sequelæ, if they occur, are due to pyæmia from the suppurating sores. The disease, although resembling syphilis in many ways, differs in not reacting to mercury.

The view of identity of syphilis and yaws is not universally accepted, especially by colonial surgeons, who see most of the latter disease. They maintain that the two diseases are distinct, and that yaws and syphilis may be seen in the same districts, but each distinct from the other. Yaws is chiefly found in agricultural districts, syphilis in the towns. The chief evidence of the distinction between the two diseases rests on the experimental inoculation by Charlouis of syphilis in a patient recently affected by yaws. Mr. Hutchinson raises two objections to this: (1,) It is an isolated observation, and has not been confirmed; (2,) If true, there is always the possibility of reinfection in syphilis.

REFERENCE.—[1] "Archives of Surg.," Jan., 1899.

YELLOW FEVER. *James Cantlie, F.R.C.S.*

Sanarelli[1] advocates the treatment of yellow fever by **Serumtherapy.** He was induced to take up this view from the fact that a patient, after an attack of yellow fever, was immune for a certain time. He proceeded to vaccinate horses with the toxin and the sterilised virus of yellow fever. The serum derived therefrom endows an immunity to guinea-pigs, and he expresses his opinion that very probably this same virus which saves animals that are destined to succumb, almost without exception, to experimental yellow fever, will be of use in the treatment of spontaneous yellow fever in man.

Dr. C. B. Fitzpatrick[2] succeeded in producing a serum by inoculating different culture media from the blood of persons dead of yellow fever. Experiment fluids were produced from cultures of the bacillus coli concentricus, the bacillus coli icteroides, and the bacillus icteroides (Sanarelli); and prophylactic fluid from a combination of the fluids of all these cultures was finally prepared, and it was found that dogs injected by one large dose of the fluid recovered from a subsequent dose which was always fatal to dogs not previously immunised by a smaller dose.

Dr. Charles Finlay[3] is firmly of opinion that mosquitoes are active agents in the spread of yellow fever, and particularly advises the prevention of mosquitoes reaching patients suffering from yellow fever, as they thereby become infected and can transmit the infection by their bites to healthy persons. He advocates all the prophylactic measures recently recommended by Ross for the disinfection of mosquito breeding-beds, such as swamps, pools, privies, street sewers and other stagnant waters, by the methodical use of permanganate of potash and other such substances in order to lessen the abundance of mosquitoes in houses.

REFERENCES.—[1] "Brit. Med. Journ.," Oct. 23, 1898; [2] "Med. Rec.," Jan. 29, 1898; [3] Ibid., May 22, 1898.

PART III.—MISCELLANEOUS.

Legal Decisions

AFFECTING MEDICAL MEN AND THE PUBLIC HEALTH.

By J. E. COONEY, L.R.C.P., D.P.H.,

Late Medical Officer of Health of Fulham, London ; of the Middle Temple, Central Criminal Court, and of the South-Eastern Circuit, Barrister-at-Law.

ABORTION.

REG. *v.* BROWN AND OTHERS (Central Criminal Court), 63 J.P. 790 ; (Mr. Justice Darling).

Attempt by Woman to Procure Abortion—Thing not Noxious—Inciting Woman to Attempt to Procure Abortion, 24 and 25 Vic., c. 100, s. 58.—A person who incites a woman to administer to herself a thing that, to his knowledge, is not in fact noxious or capable of procuring abortion, but which he knows she will take in the belief that it is capable of procuring abortion, is not guilty of inciting her to attempt to commit the crime within the meaning of the Statute.

But the woman who takes the thing, in the belief that it is capable of procuring abortion, though, in fact, it is not capable of so doing, is guilty of the attempt to commit the crime.

Semble, if the person who incites the woman to take the thing and knows it to be noxious or capable of procuring abortion, he is guilty of inciting her to attempt to commit the crime, although, owing to facts being otherwise than he believed, the commission of the crime in the manner purposed was impossible.

ADULTERATION OF FOOD.

Sale of Food and Drugs Act, 1899, 62 and 63 Vic., c. 51.—Under the provisions of this Act precautions are taken against the importation of such agricultural and other produce as margarine, margarine cheese, adulterated or impoverished milk or cream, condensed, separated, or skimmed milk, being insufficiently marked as such under penalties not exceeding £20 for the first offence, £50 the second, and £100 any subsequent offence. The Commissioner of Customs can prosecute.

By secs. 2 and 3 the Local Government Board and the Board of Agriculture may themselves procure samples and take proceedings in default of the local authority.

Sec. 4 gives power for the Board of Agriculture to make regulations as to analysis of milk, cream, butter or cheese.

The provisions of the Margarine Act, 1877, are extended to margarine cheese under secs. 5, 6 and 7, and requires a register of the quantity and destination of every consignment to be kept under penalties not exceeding £10 and £50 for first and second offences.

Sec. 8 restricts the amount of butter-fat in margarine to be 10 per cent. Sec. 9 requires every vehicle or receptacle from which milk or cream is sold in any highway or place of public resort to have the name and address of the seller conspicuously inscribed on the same under a penalty of £2; and sec. 11 requires every tin or receptacle from which condensed, separated or skimmed milk is sold to bear a label of such, under a penalty of £10.

Every article of food in course of delivery will, under sec. 14, be now liable to have samples taken as in the case of milk.

Secs. 13 to 25 deal with procedure in the Courts, and sec. 26 extends the expression "food" to every article used for food or drink—other than drugs or water—and includes flavouring matters and condiments. This Act comes into operation on 1st January, 1900.

SHORTT *v.* ROBINSON (Divisional Court) 63 J.P. 295.

Adulteration of Tea—Facts within knowledge of Justices—Justices entitled to Use—Sale of Food and Drugs Act, 1875, s. 6.—Upon the hearing of a charge of selling adulterated Capu tea, it was proved that 3·5 per cent. consisted of extraneous matters, but the Justices dismissed the charge, as such tea was grown under conditions which afforded unusual chances for the introduction of sand and small stones.

Held (Lawrence J. and Channell J.), That the justices were entitled to take into consideration facts within their own knowledge as to whether the food has been adulterated.

Reg. v. Field, 64 L.J.M.C., *followed.* *Appeal dismissed.*

DRAINS.

ELLIS *v.* BROMLEY R.D. COUNCIL, 63 J.P. 711.

Drains—Owner of House required by Local Authority to do Work which Authority are liable to do—Work done under Compulsion or as Volunteers—Right of Owner to recover Expenses from Local Authority.—The surveyor of a local authority required the owner of a house, who was making certain alterations, and who had submitted plans to the local authority for that purpose, to execute certain works, including the taking up and relaying of a drain—which was a sewer—at the back of the house, and the construction of an intercepting trap, these latter works being works which the local authority were themselves liable to do. The owner did these works under protest, but by the direction and order of the local authority, though no actual steps had been taken to enforce their execution, and no legal proceedings had been taken or serious threats of such proceedings used. The

owner sued the local authority to recover the cost, on the ground that he was compelled by them to do work which the authority were legally compellable to do.

Held (Ridley J.), That though there may be sufficient compulsion without legal proceedings, or the threats of such, to entitle a person to recover, there was not sufficient compulsion to prevent the owner being considered as a mere volunteer ; that he was, therefore, in the execution of these works acting as a volunteer, and not under compulsion, and was not entitled to recover the expenses from the local authority.

GREATER LONDON PROPERTY COMPANY *v.* FOOT (Divisional Court), 1 Q.B. (1899) 972, 63 J.P. 420.

Drain—Subsequent Deviation—Sewer—Drainage of Group of Houses by Combined Operation—Order of Local Authority—Metropolis Local Management Act, 1855, s. 250.—Case stated by a metropolitan police magistrate. The appellant was summoned for having neglected to abate a nuisance connected with the drainage of 238, Old Ford Road, Bethnal Green. It was contended by the appellant that the pipes conveying drainage under the house formed a sewer repairable by the local authority.

The register of applications by persons desirous of draining houses by a combined operation contained a plan, dated 1879, and signed by the surveyor, showing a scheme for draining a group of eleven houses, including the house in question, by a combined operation. The register showed no formal order, and it was the practice to treat a plan so signed as giving the authority to the proposed scheme without a formal order.

On an examination of the drain, it was found that there was a deviation of the pipes from that approved of by the vestry, and it was contended that such deviation altered the character of the drain, and did not bring it in the scheme approved of, and such was therefore repairable by the vestry as a sewer.

Held (Darling J. and Channell J.), That a mere deviation in the course of a drain, which an owner had a right to make, was not sufficient to convert it into a sewer, and that therefore the vestry was not liable for its repair. *Appeal dismissed.*

WESTMINSTER VESTRY *v.* HOSKINS (Divisional Court) 2 Q.B. (1899) 474 ; 63 J.P. 735.

Draining Premises—Exemptions—Volunteer Corps—Storehouse and Drill-hall—Metropolis Management Act, 1855, s. 75.—Case stated by a metropolitan police magistrate. The respondent was charged with unlawfully neglecting to comply with an order of the appellants ordering that the lowest floor of a building and premises in course of construction be kept at such a level as would allow it to be drained into the public sewer. The premises consisted of a building to be used as an armoury, store-house and drill-hall by the 2nd Volunteer Battalion of the Royal Fusiliers. It was objected on the part of the

respondent that the magistrate had no jurisdiction, as the premises were in the same position as an ordinary military barrack.

Held (Grantham J. and Lawrence J.), A building consisting of an armoury, storehouse, and drill-hall of a volunteer corps, which is vested in the commanding officer of the corps, and is intended for the use of the corps only, is not exempt from the operation of the sanitary provisions of the Metropolis Management Act, 1855, on the ground that it is occupied and used solely for the purposes of the Crown.

Appeal allowed.

CREE *v.* ST. PANCRAS VESTRY (Bruce J. without a jury), 1 Q.B. (1899) 693.

Drainage Works—Limitation of Action—Public Authorities Protection Act, 1893, s. 1. By the Public Authorities Protection Act, 1893, s. 1: "Where . . . . any action . . . . is commenced . . . . against any person for any act done in pursuance or execution, or intended execution, of any Act of Parliament, or of any public duty or authority . . . . the action . . . . shall not lie . . . . unless it is commenced within six months next after the act . . . . complained of."

The St. Pancras Vestry served notice, under the Public Health (London) Act, 1891, s. 4, on the owner of premises, requiring him to do certain specified works in order to abate an alleged nuisance arising from what was supposed to be a drain. He complied with the notice and executed the specified works at an expense of £70. In the course of the execution of the works it was discovered that the supposed drain was a sewer, which the sanitary authority was liable to repair, and the executors of the owner brought an action against the sanitary authority to recover the amount of the expenses incurred, as money paid to the use, and at the request, of the defendants. The action was not commenced within six months after the expenses had been paid.

Held, That the action was brought for an act done in pursuance, or execution, or intended execution, of the Public Health (London) Act, 1891, within the meaning of the Public Authorities Protection Act, 1893, s. 1, and ought to have been brought within six months, and therefore the defendants were not liable.

Waterhouse v. *Keen* (1825) 4 B. & C. 200, and *Midland Ry. Co.* v. *Withington Local Board*, (1883) 11 Q.B.D. 788, *followed.*

Judgment for the defendants.

ENTRY OF PREMISES.

VINES *v.* GOVERNORS OF THE NORTH LONDON COLLEGIATE AND CAMDEN SCHOOLS FOR GIRLS (Divisional Court), 63 J.P. 244.

Right of Sanitary Inspector to Enter Premises—Reasonable Ground for Entry—Issue of Warrant—Public Health (London) Act, 1891, ss. 10, 40, 115 (3) (*a*)—(Lawrence J. and Channell J.). Evidence that the sanitary inspector is honestly desirous of entering premises for

the purpose of ascertaining whether or not any nuisance exists under the Public Health (London) Act, 1891, or for the purpose of examining works under s. 40 of that Act, but without any evidence that any nuisance exists on such premises, is not reasonable ground for entry so as to empower a justice to issue a warrant under s. 115 of the Act, authorising an entry on the premises.

INFECTIOUS DISEASE.

Infectious Disease (Notification) Extension Act, 1899, 62 & 63 Vict., ch. 8.—This Act comes into operation on 1st January, 1900, and extends the Infectious Disease (Notification) Act, 1889, to take effect in every urban rural and port sanitary district in England and Wales, whether that Act has or has not been adopted therein.

WARWICK *v.* GRAHAM (Divisional Court),
2 Q.B. (1899) 191 ; 63 J.P. 599.

Order for Removal of Patient—"Proper Lodging or Accommodation"—Public Health Act, 1875, s. 124.—Case stated by two justices of the County of Cumberland. Sec. 124 of the Public Health Act, 1875, enables justices to order the removal to a hospital of any person suffering from a dangerous infectious disease who is "without proper lodging or accommodation." The respondent's son, Walter Graham, aged nine years, was living with him in his house. The persons living in his house consisted of the respondent and seven of his family, including Walter, who was suffering from a dangerous infectious disorder, namely, scarlet fever. The house was a four-roomed house containing two rooms—a kitchen and a parlour, the one leading from the other—on the ground floor, with a small scullery at the back, and on the upper floor two small bedrooms opening into each other.

The patient was kept apart in the parlour on the ground floor, but the family had to pass the door of the patient's room when they went into the street from the kitchen, where the cooking was done and the family lived and took their meals.

The patient was properly cared for so far as concerned nourishment and medical attendance, and no one else slept in the same room with him. He was comfortable and clean and appeared to have good attendance and attention, and the room where he slept was large enough and there was nothing wrong with it.

The medical men, however, who were called for the appellant and respondent respectively, agreed that it was impossible to isolate the patient properly, and that there would be danger of infection to the other people in the house if he continued to occupy his room during the progress of the illness.

The justices held, as matter of law, that there was not sufficient evidence to show that the patient, Walter Graham, was "without proper lodging or accommodation," and they refused to make an order for his removal, and dismissed the application.

The question for the opinion of the Court was whether, under the circumstances stated in the case, the justices were justified in refusing to make the order applied for.

Held (Day J. and Lawrence J.), That there was evidence that he was "without proper lodging or accommodation" within the meaning of s. 124, which section was clearly directed, not only to the protection of the sick person himself, but to the protection of other persons from infection. *Judgment for appellant. Case remitted to justices to make the order for removal.*

THE QUEEN *v.* DAVEY AND OTHERS (Divisional Court), 2 Q.B. (1899) 301 ; 63 J.P. 515.

Infectious Disease—Order for Removal to Hospital—Finality of Order—Public Health Act, 1875, s. 124.—ORDER NISI in the nature of a mandamus calling upon certain justices of Glamorganshire and one Mary Hannah Skyrme to show cause why the justices should not state a case for the opinion of the Court. The following were substantially the facts as appearing in the affidavits. Mary Hannah Skyrme had been summoned to answer an information laid by the inspector of nuisances for the Margam Urban Sanitary District, charging that on December 30th, 1898, she obstructed the execution of an order of a justice of the peace, based upon the certificate of a duly qualified medical practitioner, for the removal of Ada Olive Skyrme, then suffering from a dangerous infectious disorder, to wit, scarlet fever, and being then without proper lodging or accommodation, to a suitable hospital provided within the district of the council. It appeared that on December 6th the defendant, at the suggestion of the medical officer of health, allowed her child, who was admittedly suffering from scarlet fever, to be removed to the infectious diseases hospital provided by the local authority, and that the child remained there until December 28th, on which day the defendant went to the hospital and carried her home. The reasons for the removal of the child were that a day or two previously the caretaker of the hospital had admittedly been seen going home drunk, and that the child while in the hospital had been seen running across a wet room in her bare feet. After the return of the child home the doctor who had signed the certificate for her removal to the hospital said that if it were kept warm for two or three days it would be all right, and told the defendant that there was proper lodging and accommodation for the child in her house. The child was kept in a room at the end of a long passage apart from the other part of the house, and the room was properly disinfected in accordance with the instructions of the deputy medical officer of health. On December 30th, the inspector of nuisances, without notice to the defendant or her husband, obtained an order *ex parte* from a justice of the peace for the removal of the child forthwith to the hospital; but the defendant refused to allow the child to be removed.

It was contended for the complainant that the justices had no power to go behind the order of the magistrate for the removal of the child, and that the justices had no right to enquire into the validity of the order, or to enquire whether there was a proper hospital. The justices overruled both these objections and found as a fact that there was no suitable hospital for the reception of the child

provided within the district, and that the defendant had provided proper lodging and accommodation for her child ; they accordingly dismissed the case, and refused to state a case for the opinion of the Court. The present order *nisi* was, therefore, obtained on behalf of the inspector of nuisances.

Held (Darling J. and Channell J.), The validity of an order for the removal to a hospital of a person suffering from a dangerous infectious disorder, made *ex parte* by a single justice under s. 124 of the Public Health Act, 1875, cannot be enquired into upon the hearing of a summons under that section before a court of summary jurisdiction for obstructing the execution of the order.

Rule discharged, but, under the circumstances, without costs.

LUNACY.

HODSON AND ANOTHER *v.* PARE (Court of Appeal), 1 Q.B. (1899) 455.

Libel—Privilege—Judicial Proceeding—Petition for Order for Reception of Lunatic—Defamatory Statement in Particulars—Immunity from Action—Lunacy Act, 1890, s. 4.—Appeal from an order of a judge at chambers, under Order xxv, r. 4, reversing an order of a master striking out the statement of claim on the ground that it disclosed no reasonable cause of action, and dismissing the action.

It appeared that the defendant applied under the Lunacy Act, 1890, for an order for the detention of his wife as a lunatic. By s. 4, sub-s. 2, of the Act such an order shall be obtained upon a private application by petition accompanied by a statement of particulars and by two medical certificates. In the 2nd schedule a form is given for the statement of particulars, and one of the matters as to which information is to be given is, "whether any near relative has been afflicted with insanity."

The defendant, in his particulars in reply to this requisition, made the following statement : "Yes, her mother, with puerperal fever." This action was brought by the person referred to in this statement and her husband, on the ground that the statement was libellous. The defendant applied at chambers, under Order xxv, r. 4, for an order that the statement of claim should be struck out on the ground that it disclosed no reasonable cause of action, and that the action should be dismissed. The master before whom the summons came made an order, as prayed. On appeal, the learned judge was of opinion that the matter was not one that should be decided at chambers, and reversed the order of the master.

Held (A. L. Smith, L.J., and Chitty, L.J.), A justice of the peace or other judicial authority, to whom an application is made, under the Lunacy Act, 1890, on a petition for an order for the reception and detention of a lunatic, is acting judicially, and consequently defamatory statements made in the course of the proceedings are not actionable.

Appeal allowed.

MEDICAL QUALIFICATIONS.

HUNTER *v.* CLARE (Divisional Court), 1 Q.B. (1899) 635 ; 63 J.P. 308.

Medical Practitioner—"*Physician*"—*False Description*—*Medical Act*, 1858, *s.* 40—*Medical Act*, 1886, *s.* 6.—By sec. 40 of the Medical Act, 1858, "Any person who shall wilfully and falsely pretend to be or take or use the name or title of a physician, ... or any name, title, addition or description implying that he is registered under this Act, or that he is recognised by law as a physician, ..." is made liable to a penalty on summary conviction.

By sec. 6 of the Medical Act, 1886, a registered medical practitioner is entitled to practise medicine, surgery, and midwifery in the United Kingdom.

The appellant had been summoned to answer an information and complaint preferred by the respondent, charging that he "did wilfully and falsely pretend to be and take and use the name and title of physician, contrary to the Act."

The appellant was a duly registered medical practitioner, entitled, under the Medical Act, 1886, to practice medicine, surgery, and midwifery. In December, 1897, he attended one William Hawkins, and made use of the name and title of physician by causing to be printed and delivered to him a billhead bearing the words, "To H. Kingsley Hunter, physician and surgeon, for professional attendance, etc."

For the appellant it was contended that he was in possession of a diploma granted by the Society of Apothecaries, of London, dated October 19th, 1893, in pursuance of which he was admitted a licentiate of that Society and registered as such ; and that being so registered, and under s. 6 of the Act of 1886 : (*a*,) He was entitled to take and use the titles of "physician" and "surgeon," if he thought fit to do so ; (*b*,) That, notwithstanding the use of the name or title of physician, there was nothing to show that the appellant wilfully and falsely used the same ; that, on the contrary, he did so in good faith ; and, further, that he was authorised and justified in so doing, in consequence of the following note which was issued by the Society of Apothecaries, London :—"Society of Apothecaries of London, Blackfriars, London, E.C. The L.S.A. (1886) can call himself by any title or titles which he prefers to adopt denoting his right to practise medicine, surgery and midwifery, provided that he does not directly or indirectly assume a title conferred by another licensing body or university."

In support of the appellant's contentions the case of *Ellis* v. *Kelly* was cited.

For the respondent it was contended that the case was in all respects similar to *Reg.* v. *Baker*, (1891) 66 L.T. 416 ; 56 J.P. 406 ; that the appellant had no right under his diploma to take and use any other or additional name or title than that of "L.S.A.," and that whenever he did so and persisted in doing so he was guilty of the offence charged.

The justices were of opinion that the case was governed by *Reg.* v. *Baker*, and that the appellant had committed an offence under s. 40 of the Act of 1858, and accordingly convicted him.

The questions of law for the opinion of the Court were: (*a*,) Whether or not the appellant, holding the title of "L.S.A.," and being registered as such, was authorised to take and use the name and title of physician in the manner in which he used it; (*b*,) Whether, on the facts stated in the case, the justices were right in finding that the appellant so described himself wilfully and falsely within the meaning of s. 40 of the Act of 1858.

LAWRANCE, J.: The question which we have to decide is whether a person holding a certificate or diploma from the Society of Apothecaries, by which he is entitled to practise medicine, surgery and midwifery, as well as to act as an apothecary, is entitled to describe himself as a physician—whether in so doing he is contravening the provisions of s. 40 of the Medical Act, 1858. In my judgment he is not entitled so to describe himself, and if he did so "wilfully and falsely" the justices would be quite right in convicting him. It is unnecessary for me to go through the various cases and statutes which have been cited to us in argument. Up to the year 1886 the only certificate granted by the Society of Apothecaries was one entitling the holder to practise as an apothecary; but in that year the three bodies into which the profession is divided came to the conclusion that, for the future, no one should have a certificate entitling him to practise in one branch only, but that he must pass a qualifying examination in all three branches. The appellant in the present case had passed in all the three branches, and I gather from the correspondence that he had also a foreign diploma, and that he originally described himself as an M.D.; that it was pointed out to him that this was wrong, and that he then described himself as a "physician." The question arises as to the meaning with which the description "physician" was used; whether it was used in a general and colloquial sense as being equivalent to the expression "medical man," or whether it was used in a more definite sense—a sense which would import to most people that he held a medical degree of one of the universities, or a diploma entitling him to call himself a physician. I think the latter was the real meaning of the word; it was the meaning which would ordinarily be conveyed to anybody who saw the word on a brass plate. On that point, therefore, I think the conviction was right.

I now come to the other point, whether the appellant "wilfully and falsely" pretended to be a physician. In *Ellis* v. *Kelly* (6 H. & N. 222; 30 L.J. [M.C.] 35), a person who was legally qualified as a surgeon and apothecary, and was registered as such under the Act, possessed also a German medical diploma, and called himself "Dr."; this was held not to bring him within the purview of s. 40 of the Act. This case was followed by that of *Andrews* v. *Styrap* (26 L.T. [N.S.] 704), where a druggist, not registered under the Medical Act. described himself as "M.D.," on the ground that he held the diploma of doctor of medicine granted by an American university on payment of a sum of money; he was held to be within the section. That, of course, was a much stronger case than the present; the man was pretending to be an M.D. in England, though he was only the possessor of a worthless

foreign diploma. In the present case, after reading the correspondence, it seems to me that the appellant was determined to try the question of his right to use the title of "physician," and that he, in effect, said, "You have convinced me that I cannot call myself *M.D.*; but as I hold a certificate entitling me to practise medicine and surgery, I am entitled to call myself a *physician*." I think that his contention is wrong, but that in doing what he did he was not doing it wilfully and falsely within the meaning of the section, but in the assertion of a right, however wrong his view may have been. I think that the conviction should be quashed on that ground; there was no evidence that the appellant was doing what he did wilfully and falsely. As, however, the appellant has not succeeded on the main part of the appeal the conviction will be quashed without costs.

CHANNELL, J.: Upon the whole, I am of the same opinion. I think, though I feel some doubt upon the point, that the appellant wrongly described himself as a physician. This is the main point on which our decision is asked, for the learned counsel who appear for their respective clients are really instructed on behalf of these two societies, who want a decision of the question whether it is a true description for a gentleman holding the certificate of an L.S.A. (1886) to describe himself as a physician. The answer depends entirely, as I think, upon the sense in which that word is used in s. 40 of the Act of 1858. If "physician" there means simply a person duly qualified in law to practise in physic, then it seems to me that the appellant is a physician within the meaning of the section. If at one time it was not so, a licentiate of the Society of Apothecaries is certainly, since 1886, entitled to practise medicine and surgery, and if the word "physician" is used in s. 40 in a popular sense, I should feel bound to say that he was a person entitled to practise in physic; for if in any sense there can be said to be a distinction between physic and medicine, there is certainly none in the popular sense of those words. If, therefore, the word "physician" in s. 40 is a general word, meaning a person legally entitled to act as a doctor (in the popular sense of that word) then the appellant was entitled to call himself a physician. But having regard to the fact that prior to the Act of 1858 the term "physician" was commonly used in a technical sense as meaning a member of the highest grade of medical practitioners, I think that the word was used in the same sense in that Act. There is, I think, some confirmation of this view in the fact that most of these words have application to specific bodies entitled to grant qualifications, and that the word "physician" had acquired a technical sense, and was used as importing a particular grade of medical practitioner: in that technical sense it is not correct to say that the holder of a certificate of L.S.A. is a physician. Certainly he was not so before the Act of 1886, for physic included not only medicine, but surgery also; and the Society of Apothecaries did not then grant qualifications in surgery. That being the case, we have no binding authority upon the question of the meaning of "physician" in the section. At first sight I thought that *Reg.* v. *Baker* was an authority which bound us to decide against the appellant, but upon

further consideration I do not think so. In the first place, that case was argued upon a rule for *a certiorari*, so that any jurisdiction in the justices to decide as they did would have necessitated the discharge of the rule; and, secondly, it was before the year 1886, and the qualification of the practitioner did not then authorise him to practise in surgery, and he was not a physician. Upon the whole, therefore, I think, though not without doubt, that the word "physician" is used in s. 40 in a technical sense, and that in that sense the appellant is not a physician.

Then, did the appellant "wilfully and falsely" describe himself as a physician? On that point *Ellis* v. *Kelly* is a distinct authority. It is said that Lord Bramwell subsequently recanted some of his opinions in that case, but it does not appear what he recanted; at any rate, his decision remains, and it was this: that the practitioner in that case was not really an M.D. in the sense in which that expression was used in the Act, but that he had reasonable grounds for thinking that he was; if that is the meaning of the judgment, it covers the present case. The difference between that case and the subsequent one of *Andrews* v. *Styrap* is that in the former case there was a foreign qualification, but a genuine one, while in the latter there was only a bogus diploma for which no examination was necessary, and for which the practitioner wrote and paid a sum of money in order to represent himself as an M.D. This is what Martin B. meant when he said that the practitioner "did it on purpose." I cannot treat *Ellis* v. *Kelly* as overruled or impugned by *Andrews* v. *Styrap*. I think, therefore, that although the appellant incorrectly described himself as a physician, he did not do so "wilfully and falsely" upon the grounds explained by the Court in *Ellis* v. *Kelly*. The conviction will therefore be quashed; but as our decision upon the point mainly argued is in favour of the respondent, it will be right that it should be quashed without costs. The justices ask us two questions: the first, "Whether or not the appellant, holding the title of L.S.A., and being registered as such, is authorised to take and use the name and title of Physician in the manner the appellant so used it?" We answer in the negative. To the second: "Whether, on the facts stated, we were right in finding that the appellant so described himself wilfully and falsely within the meaning of s. 40 of the Medical Act of 1858," we say that the justices were wrong, and on that ground we quash the conviction.

Judgment for the appellant.

NUISANCE.

KINSON POTTERY COMPANY, LTD. *v.* CORPORATION OF POOLE (Divisional Court), 2 Q.B. (1899) 41; 63 J.P. 580.

Nuisance by Sewage—Drainage of Houses—Want of Structural Convenience—Liability of Owners—"Drain"—"Sewer"—Public Health Act, 1875, ss. 4, 13, 15, 21, 94, 95.—Case stated by justices for the borough of Poole. The appellants were summoned by the sanitary authority of the borough of Poole for non-compliance with a notice to abate a nuisance caused by turning slop and scullery water from

twelve houses, owned by the appellants, into a drain constructed beside a highway to receive the surface water of the highway, which emptied into an open ditch. According to the plan deposited with the sanitary authority when the houses were built by the appellant's predecessor in title, the houses should have been drained into cesspools, but cesspools to receive the slop and scullery water had not been constructed. No sewer had been constructed by the sanitary authority, by means of which the houses could be drained. The houses were separately occupied, and were not within the same curtilage. The justices made an order to abate the nuisance, by disconnecting the drains of the houses from the surface-water drain, and making cesspools for the houses.

Held (Darling J. and Channell J.), That the sanitary authority were not bound, under the Public Health Act, 1875, s. 15, to provide a sewer to drain the appellant's houses ; that the surface-water drain, though for some purposes a "sewer," within the meaning of s. 4, was not a sewer into which the appellants were entitled to empty their drains, that the nuisance was caused by the want of a structural convenience within the meaning of s. 94, and therefore the defendants, as owners, were liable. *Appeal dismissed.*

OFFENSIVE TRADE.

DUKE OF DEVONSHIRE *v.* BROOKSHAW, 63 J.P. 369. (Kekewich J.).

Offensive Trade or Business—Fish-frying—Public Health Act, 1875, s. 112.—Although the business of a fried-fish seller is not necessarily an offensive trade or business within the meaning of the Public Health Act, 1875, s. 112, when such business is shown by the evidence to be carried on in such a way as to be offensive to the neighbours, the Court will grant an injunction for breach of a covenant against using the premises for any offensive trade or business whatsoever.

SEWERS.

BARON *v.* PORTSDALE N.D. COUNCIL, 63 J.P. 726.
(Mr. Justice Mathew).

Sewers—Cleansing of—Neglect of Local Authority to Cleanse—Nuisance and Damage to Adjoining Land by Sewage—Liability of Authority to Action for Damage—Public Health Act, 1875, ss. 19, 299.—If a local authority knows that a sewer vested in them requires to be cleansed, and neglects to cleanse and empty the same as required by s. 19 of the Public Health Act, 1875, and damage is thereby caused to the occupier of adjoining land by sewage coming upon his land, the occupier can maintain an action in respect of such damage against the local authority. The remedy of the person damnified in such a case is not by complaint to the Local Government Board under s. 299, which contemplates and applies to cases where there are not sufficient sewers for a district, but which does not apply to the case when there is a sufficient sewer and the local authority neglects to keep that sufficient sewer properly cleansed.

DAVIS *v.* WITNEY N.D. COUNCIL (Court of Appeal), 63 J.P. 278. (Smith, L.J., Collins, L.J., and Romer, L.J.).

Sewer—Compensation—Withdrawal of Notice to Arbitrate—Jurisdiction of Arbitrators to award Costs—Public Health Act, 1875, ss. 16, 308.—A notice under s. 16 of the Public Health Act, 1875, may be withdrawn by the local authority at any time before the works are commenced. On a submission to arbitration to assess the amount of compensation under s. 308 of the same Act, due by reason of damage caused by the construction and execution of a sewer under s. 16, the arbitrators have no jurisdiction to award compensation for damage merely caused by the giving of the notice under s. 16 before the construction and execution of the sewer is commenced, nor to award costs if the notice is withdrawn before the works are commenced.

VESTRY OF ST. MARY, ISLINGTON, *v.* HORNSEY N.D. COUNCIL, 63 J.P. 488.

Sewer—Drainage into Vestry's Sewer—Injunction.—Action by the plaintiffs, the Vestry of St. Mary, Islington, in the County of London, against the defendants, who are outside the County of London, for an injunction to restrain the defendants from permitting their drains and sewers to remain connected with the plaintiffs' sewer; also an injunction to prevent any future connection.

Held (Kekewich J.), That the Court had no jurisdiction to compel the defendants to remedy the inconvenience caused by the connection of their drains and sewers with the plaintiffs' sewers; and the Court would not grant an injunction the result of which would be to create a public nuisance.

SYKES *v.* SOWERBY URBAN COUNCIL (Divisional Court), 1 Q.B. (1899) 979.

Sewer—Vesting in Local Authority—Sewer made by Landowner "for his own Profit"—Public Health Act, 1875, s. 13, sub-s. 1.—Appeal from the county court of Yorkshire, holden at Halifax. A drain was made by the owners of a quarry for the purpose of carrying off the surface and rain water coming on to his land, and which but for being so carried off would have flooded the quarry. The drain emptied into a public sewer. The defendants, in 1896, turned a current of admittedly polluted water into this drain for the purpose of enabling it to pass through it into the public sewer.

The plaintiff brought an action in the county court for damages and for an injunction. The defendants contended that the drain was a sewer vested in them, and was not the private drain of the plaintiffs, which was not upheld by the county court judge. The defendants appealed.

Held (Darling J. and Channell J.), That such a sewer as made by the plaintiffs is not a sewer made by any person for his own profit within the meaning of s. 13, sub-s. 1, of the Public Health Act, 1875.

Appeal allowed.

UNSOUND MEAT.

WALSHAW *v.* MAYOR, ETC., OF BRIGHOUSE (Court of Appeal), 2 Q.B. 286.

Unwholesome Meat—Damage by Reason of Seizure—Costs of Summons—"Full Compensation"—Arbitration—Findings of Arbitrator—Public Health Act, 1875, ss. 116, 117, 308.—Appeal from a Judgment of Day J. at the trial of the cause without a jury. Meat belonging to the plaintiff and alleged to be unwholesome was seized by the inspector of nuisances of the defendant corporation, and condemned by a magistrate. The owner was proceeded against, but the summons was dismissed by the justice for a defect in form, and no order was made as to costs. On an arbitration, under the Public Health Act, 1875, the arbitrator found: (1,) That the seizure and condemnation of the carcase was made as alleged; (2,) That the magisterial information was laid and dismissed, as alleged; (3,) That the carcase was not diseased, or unsound, or unwholesome, or unfit for the food of man when the order to destroy the same was made: (4,) That the carcase, when the same was ordered to be destroyed, was sound, wholesome, and fit for the use of man; (5,) That the owner of the carcase sustained £96 11s. as damage by reason of the exercise of their powers by the Corporation under the Act. In an action on the award, the defendants contended that the award should not have determined the question of liability, but only the question of the amount of compensation, and that it was bad for excess, and they tendered evidence for the purpose of showing that the meat was unsound. The learned judge refused to admit this evidence, and gave judgment for the plaintiff.

Held (A. L. Smith L.J., Rigby L.J., and Vaughan Williams L.J.), That the finding of the arbitrator as to the soundness of the meat was conclusive; that the corporation was liable to pay to the plaintiff full compensation for the damage sustained by reason of the acts of the officer of the corporation; and that such full compensation included the costs to which the plaintiff was put in opposing the summons.

Appeal dismissed.

BROWN *v.* DUNSTABLE CORPORATION, (1899) 2 Ch. 378; 63 J.P. 579.

Sewers—Discharge of Sewage on to Private Lands—Nuisance—Claim of Right for Inhabitants of a Parish—Injunction—Prescriptive Right in Third Parties to Drain into Sewers—Power of Sanitary Authority to stop existing and future Connection with Sewers—Public Health Act, 1875, ss. 21, 299.—In an action by a landowner, Major Brown, against the Corporation of Dunstable for an injunction to restrain them from discharging, or allowing to be discharged, sewage upon his lands from the sewers vested in them so as to cause a nuisance, the defendants set up a prescriptive right based on the presumption of a lost grant by the plaintiff's predecessors in title to trustees for the benefit of the inhabitants for the borough to drain all sewage from any tenements built or to be built within the borough, and to discharge the same on the plaintiff's lands. The claim of right

failed. It was proved, however, that there was a number of houses in the borough in respect of which prescriptive rights had been acquired to pass sewage into and along the sewers, and that there were other houses the connections of which with the sewers had been made with the consent or by the acquiescence of the inhabitants.

Held (Cosens-Hardy J.), That an injunction could not be granted so as to interfere with the prescriptive rights that had been acquired, nor to oblige the defendants to stop up the connections of the other houses which they had sanctioned; but that an injunction must be granted to restrain the defendants from authorising or directing any sewage to flow or be discharged on to the plaintiff's lands from sewers vested in them as the sanitary authority.

Attorney-General v. *Acton Local Board*, (1882) 22 Ch.D. 221, and *Attorney-General* v. *Clerkenwell Vestry* (1891) 3 Ch. 527, *followed*.

Held, also, following *Ainley* v. *Kirkheaton Local Board*, (1891) 60 L.J. (Ch.) 734, that a householder has an absolute right under s. 21 of the Public Health Act, 1875, to connect his drains with a sewer, subject only to the regulations prescribed by the local authority in whom the sewer is vested, as to the manner in which the connections are to be made, and therefore that an injunction could not be granted to restrain the defendants from allowing any future connections to be made with their sewers.

Charles v. *Finchley Local Board*, (1883) 23 Ch.D. 767, *dissented from on this point.*

Held, further, that the plaintiff ought to have applied to the Local Government board, under s. 299 of the Public Health Act, 1875, to make an order on the defendants to adopt a proper system of sewage for their district.

VACCINATION.

THE QUEEN *v.* LOWNDES AND OTHERS (Divisional Court), 1 Q.B. (1899) 577; 63 J.P. 344.

Vaccination—Conscientious Objection—Requirement of Production of Birth Certificate—Vaccination Act, 1898, s. 2. RULE NI I for a mandamus to justices for the county of Buckingham. An application by the parent of two unvaccinated children, whose births had been registered, for certificates of conscientious objection under s. 2 of the Vaccination Act 1898, was refused by the justices on the ground that they required the production of certificates of the children's births to enable them to be more easily identified, and ensure that the description of the children in the certificates of conscientious objection should correspond with their description in the monthly list of births that are sent to the vaccination officer by the registrar of births and deaths, under s. 8 of the Vaccination Act, 1871, which monthly lists, by an order of the Local Government Board, dated October 18th, 1898, are to constitute the vaccination register of the district.

Held (Lawrence J. and Channell J.), That the justices were entitled to refuse to give certificates under s. 2 of the Vaccination Act of 1898, unless and until the applicant produces to them a certificate of the registration of the child's birth. *Rule discharged.*

THE QUEEN *v.* LEICESTER GUARDIANS (Divisional Court), 2 Q.B. (1899) 632.

Duty of Guardians to appoint Vaccination Officer—Mandamus—Alternative Remedy—Legal Remedy—Vaccination Act, 1871, s. 5.—RULE NISI, obtained on behalf of the Local Government Board, for a mandamus to the Leicester Guardians to appoint a Vaccination Officer for the parish of Leicester.

On December 31st, 1898, the vaccination officer for the parish of Leicester having resigned, the guardians, though having been written to several times to appoint an officer deferred doing so, and on May 3rd, the Local Government Board received a memorial from the guardians in which was embodied their reasons for being averse to appointing a vaccination officer. The board thereupon told the guardians that it was their duty to appoint such officer without delay, and unless the necessary steps were taken to do so, an application for a mandamus would be made to the High Court.

Held (Darling J. and Phillimore J.), The duty imposed upon guardians, by s. 5 of the Vaccination Act, 1871, to appoint a vaccination officer may be enforced by a writ of mandamus, upon the application of the Local Government Board.

(See also p. 651.) *Rule absolute accordingly.*

WATER-CLOSETS.

ROBINSON *v.* CORPORATION OF SUNDERLAND (Divisional Court), 1 Q.B. (1899) 751 ; 63 J.P. 341.

Water-Closets—Order for Entry on Premises—Public Health Act, 1875, ss. 36, 305.—Case stated by the justices of the borough of Sunderland. The appellant was summoned on an application for an order authorising the respondents to enter, examine, and lay open the appellant's house for the purpose of making plans, surveying, measuring, and executing works—namely, to provide a sufficient water-closet and an ashpit for such house.

The appellant tendered evidence as to the condition of the house and premises, and as to the sufficiency of a privy and ashpit there. This evidence was objected to by the respondents ; and the justices, being of opinion that they were not entitled to review the decision of the local authority as to the sufficiency of the existing privy and ashpit, declined to hear evidence thereon.

Held (Lawrence J. and Channell J.), When an application is made under s. 305 of the Public Health Act, 1875, to a court of summary jurisdiction for an order authorising a local authority to enter upon premises for the purposes of making a sufficient water-closet there in pursuance of the powers given by s. 36, the Court has no jurisdiction to

entertain an objection by the owner of the premises that such entry is unnecessary because they are already provided with sufficient sanitary appliances.

Judgment for the respondents. Leave to appeal.

NICHOLL *v.* EPPING U. D. COUNCIL, 1 Ch. (1899) 844; 63 J.P. 600.

Water-Closets and Privies—Powers of Local Authority—Substitution of Water-Closet for Privy—Public Health Act, 1875, s. 36.—By s. 36 of the Public Health Act, 1875, if a house within the district of a local authority appears to such authority, by the report of their inspector of nuisances, "to be without a sufficient water-closet, earth-closet or privy, and an ashpit furnished with proper doors and coverings," the local authority are directed to give notice to the owner or occupier of the house requiring him "to provide a sufficient water-closet, earth-closet or privy, and an ashpit furnished as aforesaid, or either of them, as the case may require."

Held (Stirling J.), That a local authority had power under this section, upon being satisfied that a house within their district was without a sufficient privy, to require the owner (subject to his right to appeal to the Local Government Board, under s. 268) to provide a sufficient water-closet in the place of the existing privy.

BARNETT *v.* LASKEY (Divisional Court), 63 J.P. 5.

Privies—Cleansing undertaken by Local Authority—Notice to Substitute Water-closets for Privies—Definition of Cleansing—Duty of Local Authority—Public Health Act, 1875, ss. 42, 94 (Lord Russell of Killowen, L.C.J., and Wills J.).—When a local authority have themselves undertaken the cleansing of privies under s. 42 of the Public Health Act, 1875, and, owing to cases of typhoid fever in the houses to which the privies are attached, the privies have become in such a state as to be a nuisance and injurious to health, the local authority are responsible for the abatement of the nuisance, and not the owner of the houses, especially where such owner has recently purchased such houses in that condition without knowledge of the existence of the nuisance.

ROBINSON *v.* MAYOR, ETC., OF SUNDERLAND (Court of Appeal), 63 J.P. 19.

(A. L. Smith, L.J., Rigby, L.J., and Collins, L.J.)

Water Closet—Powers of the Corporation—Report of Inspector of Nuisances—Public Health Act, 1875, s. 36.—A statement of claim, alleging that a notice purporting to be given under s. 36 of the Public Health Act, 1875, was given without any previous report of the inspector of nuisances, and that a trespass is threatened and intended by the local authority in default of compliance with such notice, and praying an injunction, discloses a reasonable cause of action.

WATER SUPPLY.

WEST LANCASHIRE R. D. COUNCIL *v.* OGILVY (Divisional Court), 1 Q.B. (1899) 377.

Water Supply to House—Owner—Expenses—Public Health Act, 1875, s. 62—*Public Health (Water) Act*, 1878, s. 3.—Case stated by justices of the County of Lancaster. By the Public Health Act 1875, s. 62, a local authority may, under certain conditions, require the owner of a house within their district to obtain a supply of water to his house, and in default of his compliance may themselves do the necessary work and recover the expenses from him. By the Public Health (Water) Act, 1878, s. 3, a rural sanitary authority may, when a house within their district has not within a reasonable distance from it a supply of water, and they think that such supply can be brought within a reasonable distance at a cost not exceeding certain specified limits of amount, require the owner to provide such supply within a reasonable distance of his house, and in default of his compliance may themselves execute the necessary works, and recover the cost from him.

The respondent was summoned before the justices, to show cause why an order should not be made for payment by him to the appellants of the sum of £6 10s. 5d., being the balance of expenses incurred by them, and beyond the maximum an owner could be required to pay under s. 3 of the Public Health (Water) Act, 1878, and incurred by them in executing works for obtaining and furnishing a supply of water to premises of which he was the owner.

Held (Lawrence J. and Channell J.), That s. 3 of the later Act did not apply to limit the amount of the expenses which the local authority might recover against the owner in proceedings under s. 62 of the earlier Act. *Appeal allowed.*

Sanitary Science, 1899.

By JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,

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BIOLOGICAL TREATMENT OF SEWAGE.

The bacterial, or biological, treatment of sewage has come in for a very large amount of attention. Sir W. H. Preece, F.R.S., in his address before the Sanitary Institute Congress, at Southampton, spoke optimistically of the system as having come to stay, though still in its experimental stage, with the patent list showing that finality has not yet been reached. The sewage before treatment ought to be first clarified by sedimentation and rough filtration (*i.e.*, screened), and then passed on to the bacterial beds, consisting of ordinary gas coke in pieces the size of walnuts, and extending not less than $3\frac{1}{2}$ or 4 feet in depth. With such preliminary treatment the capacities of the beds are quickly reduced about two-thirds, so that only one-third of the gross capacities of the beds must be relied upon as water capacities, and each bed is generally filled three times during the twenty-four hours, with one week's rest in six weeks. A further point to be emphasised is that the principle depends for its efficiency upon the presence of bacteria, and the sewage to be treated, therefore, must be suitable and not inimical to bacterial life, *e.g.*, owing to the presence of excess of acids, strong trade (chemical) refuse, previous chemical treatment, etc. ; whilst the effluent must be finally treated on land (the area of the land depending upon its character)—a highly necessary provision, for it has been recently shown by Drs. Clowes and Houston that such bacteria as the bacillus enteritides sporogenes and the bacillus coli communis (and why not also the bacillus typhosus ?) pass through the bacterial beds in but slightly diminished numbers. Secondary filtration is sometimes also resorted to. With proper working, 1,000,000 gallons of sewage per day can be treated upon a bed one acre in area. Frost does not affect the filters.

There is still rivalry amongst the various methods of bacterial treatment, *e.g.*, the open beds of Sutton (Dibdin) as opposed to the closed, or septic, tanks of Exeter (Cameron), though the latter would appear not to be so necessary as it was at first thought would be the case, at least judging by the result obtained from the large numbers of experiments which are being carried out by the State Board of Health of Massachusetts. This is a point, however, amongst others, that will be settled finally by the Royal Commission at present sitting, although several years must elapse before its report is presented to Parliament. One thing is settled already, and

that is, that chemical treatment is a failure, accentuating the sludge nuisance; whereas the bacterial treatment removes soluble and insoluble organic matters, thereby reducing the sludge nuisance to a minimum.

DIPHTHERIA AND ITS PREVENTION.

The question of school-attendance influence upon the prevalence of diphtheria (and the same applies, of course, to other infectious diseases and diseases of a parasitic skin type) is a serious one, calling for all the precautionary measures possible. Amongst such methods may be mentioned medical inspections of the scholars, such as is carried out *daily* in New York and other towns in America, with the taking of throat swabs for bacteriological examinations as may be required. That such examinations are necessary at times is admitted by all medical officers, with the strange exception of Dr. W. R. Smith, the Medical Officer of the London School Board, who still holds to his opinion that school influence in the spread of diphtheria is an almost negligible quantity, practically speaking—an opinion that was brought prominently forward in a Special Report presented to the London School Board in 1897, and which has been again emphasised in the course of the Harben Lectures delivered at the end of the year 1899, also by Dr. Smith, in connection with the Royal Institute of Public Health. Mr. Shirly Murphy, on the other hand, as Medical Officer to the London County Council, has recently published a complete set of careful analyses of the Metropolitan statistics, showing very clearly: (1.) The fall in the amount of diphtheria prevalence at holiday times—a fall which may naturally vary in amount from year to year; and (2,) The fact that the relative incidence of diphtheria mortality has become more pronounced at the school ages, as have also the mortalities from measles and whooping-cough (though not the mortality from scarlet fever).

The Klebs-Löeffler bacillus is the *vera causa* of diphtheria, and should be examined for in all suspected cases. Out of twelve thousand one hundred and seventy-three cases examined bacteriologically by Prof. Sims Woodhead on behalf of the Metropolitan Asylums Board, the true bacillus was found in 73·5 per cent., no bacilli were found in 26·5 per cent., whilst in only 5 per cent. did bacteriological examination fail to assist diagnosis. The exact significance of the presence of the so-called *pseudo*-diphtheria bacillus has not yet been decided, but recent investigations seem to point to the true and the pseudo being allied very closely morphologically, the latter being simply an attenuated modification of the former. If this view be the correct one, the importance of precautions being taken in the way of notification, isolation, disinfection, etc., must be admitted, even in the cases of throats that show only the presence of such pseudo-bacilli. Diphtheritic paralyses have been noticed after pure pseudo-diphtheria throats.

All recent statistics go to prove the truth of the earlier ones as to the value of antitoxin in the treatment of diphtheria cases—the

earlier the treatment, the better, remembering also the importance of a sufficient dose being given, *e.g.*, up to 3,000 or 4,000 units (or even more) if necessary. The Metropolitan Asylums Board statistics show a reduced death-rate from diphtheria of 15·4 per cent. for 1898 as compared with 17·7 per cent. for 1897, 21·2 per cent. for 1896, 22·8 per cent. for 1895, making altogether an average yearly death-rate of 19·3 per cent. for the four years 1895–8 (during which antitoxin had been used) as compared with 29·9 for the four previous years, 1891-4 (during which no antitoxin was used). This lowering of the death-rate for diphtheria is also true whether taken as a whole or at different age groups. Recently published Prussian statistics, too, go to prove the same, the death-rate from diphtheria having been reduced from 15·5 per 10,000 living during the decennium 1885-94, to 9·0, 7·6, and 6·2 respectively for the years 1895, 1896 and 1897 ; and the same tendency is noticeable in connection with almost all statistics published from time to time. The advantages of antitoxin treatment in diphtheria cases are thus proved, despite the opinions expressed to the contrary by Dr. George Wilson (who appears to be a strong anti-vivisectionist) before the British Medical Association (State Medicine Section) at Portsmouth during the past year—prophylactic inoculations being based, according to Dr. Wilson, upon errors, and the outcome of illogical inductions, every one of them with the single exception of vaccination ! In view of the success of the antitoxin treatment, the action of certain Guardians in prohibiting their medical officers from using it for poor-law patients may almost be described as criminal, whilst, on the other hand, the recent decisions of the Metropolitan Asylums Board and other Public Bodies to distribute the remedy gratuitously, are worthy of all praise.

FOOD PRESERVATIVES.

The question of food preservatives has been brought prominently forward during the year, and the general feeling amongst Medical Officers of Health appears to be against the use of preservatives in any shape or form in connection with food, though Drs. Rideal and Foulerton emphasise the fact, as brought out by their experiments, that boric acid in the strength of 1 in 2,000, or formic aldehyde (1 in 50,000), is sufficient to keep milk sweet for twenty-four hours, even in warm weather, without apparently having any appreciable effect, or, at least, an effect that might be disregarded, upon digestion or upon the digestibility of foods preserved in that way. Further, formic aldehyde, in the strength mentioned above, does not appear, from the investigations specially conducted, to have any injurious action upon animal tissues or upon nutrition. Indeed, it is questionable if food preservatives (in small proportions as above) have as bad an effect on digestion as may be produced by condiments, such as are daily used with food, *e.g.*, salt, vinegar, alcohol, tea, Worcester sauce, etc. A common-sense view of the question is that milk should not be "doctored" in any way except by sterilisation, if required; but that the wholesale condemnation and prohibition of food preservatives as

such, on the lines laid down by Medical Officers of Health, would be a great misfortune and an injustice. It would be better to choose those preservatives that have the least tendency to act deleteriously on digestion or nutrition—a conclusion come to by Herr Leffman as the result of careful experiments concerning their action on (more especially) starch digestion. The preservatives in common use are salicylic acid, calcium bisulphite, sodium benzoate, formaldehyde, boracic acid, and borax, and the two last-named, at least in small doses, are found, after experiments, to be not only non-injurious to the human system, but really wholesome substances—at least, by Dr. Oscar Liebreich, of Berlin.

HOUSING OF THE WORKING CLASSES.

One of the burning questions of the day is the housing of the working classes, and the subject has again and again, therefore, come up for discussion during the past year, and many suggestions (more or less impracticable) have been offered as attempts to solve this question. The condemnation of insanitary areas under Part I. of the Housing of the Working Classes Act, 1890, has been, and is still, the fashion with public authorities from the London County Council downwards, and the immediate result has been a wholesale displacing of tenants—a procedure altogether unwarranted, and one which ought only to be adopted by sanitary authorities as a *dernier ressort*, if at all. What happens? As tenants are displaced, they move into neighbouring houses, which they consequently crowd and overcrowd. The increased demand for accommodation sends up the rents, and sub-letting takes place to a greater or lesser extent, with the result that the neighbouring houses, which before were passable considering all things, tend to become, and do rapidly become, rookeries. Slums are thus removed from one part of a district to another, and Authorities find that they are keeping in a vicious circle, and that, too, at an enormous cost to the general body of ratepayers, and without compensatory advantages (sanitary or otherwise). The result is that public bodies are beginning to pause and consider carefully the pros and cons before entering upon an area-condemnation scheme, whilst provision is made (or suggested) for the sufficient and suitable accommodation of the tenants who are to be displaced *before* they are displaced—a most important consideration, and one which is now being more or less insisted upon by all Government Departments in connection with Railway Extensions and Improvement Schemes, etc. Hitherto, the practice has been to condemn an area, displace the tenants, and then consider as to where such displaced tenants are to go, with the very natural result that the consequences are not satisfactory to the promoters of the scheme, and certainly not to the displaced tenants.

Allowing the necessity for providing sufficient and suitable accommodation, the question arises as to what is suitable accommodation. It will not meet the case to simply build large models, for into such the displaced tenants (at least, the majority) will not go, preferring as they do the privacy and independence of a self-contained cottage or

house. Then again, it is not sufficient to provide dwellings in the suburbs even with cheap trains or trams, for a large number of the working classes must live near to their work, especially those who depend upon casual or irregular work, which is in, or near to, their particular neighbourhood. What is therefore required is, to build dwellings in the immediate neighbourhood, and such dwellings must be self-contained, whether in the form of tenements in blocks, flats, or cottages ; and for the very poor, model lodging-houses (for females as well as for males). This latter accommodation has been provided by the Glasgow Corporation, and is proving highly satisfactory and a great boon to the very poor of that municipality. Another important consideration is the rents at which the rooms are to be let. It is clear that 2/- per room should be a *maximum* weekly charge—at least as far as the tenants are concerned, though as much cannot be said for the owners or landlords, who, owing to increased cost of land and building materials, and the rigorous bye-laws that are now almost everywhere enforced, not to mention the great cost of labour owing to higher wages and shorter working hours, find themselves unable to charge so low a rental. How is this difficulty to be got over? Where the Sanitary Authority is the owner or landlord, the loss can be made good out of the rates ; or if private enterprise must supply such accommodation, powers must be asked for to enable money to be lent to builders and others at very low rates of interest (*e.g.*, $2\frac{1}{2}$ per cent.) by public bodies, and to be repayable after much longer periods than have been hitherto allowed. Why should not a public body purchase land, and then lend, for the building of working-class dwellings, to private owners money at $2\frac{1}{2}$ per cent. (or less) for a period of (say) ninety-nine years—the buildings to revert to the public body, *i.e.*, the ratepayers, at the end of that time, and the land which has meanwhile much increased in value? The suggested policy of obtaining new Parliamentary powers for buying land *outside* the jurisdiction of the Sanitary Authority concerned, and building dwellings thereon for the working classes, is doubtful even with cheap trams and railways, for whilst the skilled artisans and others may take advantage of such country dwellings and may be able to meet the charges of rent *plus* travelling expenses, there are many of the lower grades of the working classes who must be near to their work either from compulsion or from preference. Central congestion may in this way be slightly relieved, but such relief is practically a negligible quantity as far as the general question is concerned. Public bodies must, therefore, face the absolute necessity of providing suitable dwellings centrally, or at least within their own districts, at a financial loss, if necessary.

So much attention has been paid to area-condemnation under Part I. of the Housing Act that it has been sometimes overlooked that Part II. gives powers to a Medical Officer of Health to condemn separate houses, or small collections of houses forming courts and streets, and have them (1,) Put into proper order and condition, or (2,) Closed and afterwards demolished. The Public

Health Acts, too, give powers to have houses kept in proper order and condition, and a systematic house-to-house inspection of the dwellings of the working classes can do much to improve them and to keep them in a sanitary state and fit for habitation without causing (practically) any displacement of tenants. For ordinary purposes the Public Health Acts give all the powers necessary, but in extreme cases Part II. of the Housing of the Working Classes Act, 1890, enables Sanitary Authorities to deal satisfactorily with insanitary property—the "owners," who under this particular Act are generally freeholders or leaseholders having not less than twenty-one years' interest, preferring to have their condemned premises put into proper order and condition than to have them closed. The extreme cases in which the Housing Act must be put into force may be grouped as follows:—

(1,) Want of proper site.

(2,) General dilapidation and want of repair (from age or otherwise).

(3,) Defective construction of houses, either as built originally, or as developed since.

(4,) The existence of serious sanitary nuisances, arising from defective drains, etc.

(5,) The close proximity of obstructive buildings.

(6,) The fact that short-termed leaseholders, or owners, are sometimes financially unable, or unwilling, to spend sufficient money on their properties, etc., etc.

Part III. of the Housing Act is also useful, giving powers to Sanitary Authorities: (1,) To acquire (compulsorily or otherwise) land for the erection thereon of lodging houses or cottages for the working classes; or (2,) To purchase and convert existing buildings into dwellings for the labouring classes.

In connection with the housing of the working classes it may be mentioned that the London County Council applied during the past year to the owners of the well-known Rowton Houses for permission to register them as common lodging-houses, but such permission was refused—a decision upheld both by the magistrate before whom the County Council took the case, and by the High Court, to whom the Council appealed. Salvation Army and other shelters were, however, held by the same Appeal Court to come under the supervision of the Council in the same way as common lodging-houses.

LEICESTER AND VACCINATION. (See also p. 643.)

A rule *nisi* was obtained recently by the Local Government Board for a mandamus to the Leicester Guardians to make the appointment of a vaccination officer, with the result that the Guardians first vacillated, but finally gave in and appointed as vaccination officer a man who was himself stated to be a vaccination defaulter! The Local Government Board refused to sanction the appointment, and the rule for a mandamus was made absolute, so that the Guardians have since appointed another officer more suitable for, and one pledged in writing to, the carrying out of the important duties attach-

ing to his position. Mr. Justice Darling, in connection with the Leicester Guardians' endeavour to thwart the High Court, was very scathing in his remarks, stating that the Guardians had succeeded in proving themselves neither heroes nor martyrs, but had simply joined the maximum of disobedience with the minimum of courage. Further, the nineteen recalcitrant members of the Leicester Board of Guardians, headed by Mr. J. T. Biggs, humbly apologised for their contempt of Court—the apologies being described by the Court as "of no value whatever, being neither here nor there"; and so the Leicester farce is over, but the lesson is to be, and is quickly being, noted by other Boards of Guardians who at first felt inclined to kick over the traces of the New Vaccination (1898) Act. The Conscience Clause of this new Act is sufficient to prevent persons being compelled to have their children vaccinated, but failing their taking advantage of such clause, vaccination is as compulsory as ever, whilst the new vaccination officers are (as regards taking action against defaulters) still independent of their Boards of Guardians—an important and wise provision conferred by the Vaccination Acts as interpreted by law officers. It would appear, from present available statistics, that the "conscientious objector" craze is dying out, and the numbers of vaccinations rapidly mounting up; indeed, the figures for the past year are showing enormous increases, 355,987 certificates having been received for the whole of England and Wales for the first half of 1899 as compared with 278,588 during the corresponding portion of 1895 (*i.e.*, an increase of 27·7 per cent.), whilst Gloucestershire for the same period shows an increase of 111 per cent., and Leicester 743 per cent. Undoubtedly, the use of glycerinated calf lymph is helping towards this desirable state of things, as the confidence of the outside public in such lymph must be growing, in view of the experiments made by bacteriologists, which go to prove that glycerin, as an adjunct to lymph, has the power of purifying it and freeing it from all extraneous micro-organisms—even the tubercle bacilli, which are invariably destroyed within four weeks. Glycerinated calf lymph keeps its potency for at least nine months. Domiciliary vaccination is much approved of also, and is helping to make vaccination more popular.

NOTIFICATION UNDER THE FACTORY AND WORKSHOPS ACTS.

Amongst new duties devolving upon medical practitioners is the notification, under the Factory and Workshops Acts, of lead, phosphorus and arsenic poisonings, or of anthrax, contracted in any factory or workshop. The fee payable to the notifying medical practitioner is 2/6 per notification, which must be sent to the Chief Inspector of Factories, Whitehall, London, S.W.

THE SANITARY INSPECTORS' EXAMINATION BOARD.

The new Examination Board for Sanitary Inspectors has been at last formed for London; examiners have been appointed, and the first examination has been held (in December, 1899). All future Sanitary Inspectors for London Parishes must hold the qualification

of this Board, and it is to be hoped that the Provinces will quickly follow the example set by the Metropolis. The examination required consists of :—

(1,) Preliminary—written and oral.

(2,) Technical—written, oral and practical. The technical consists of : (*a*,) Elementary physics and chemistry in relation to water, soil, air and ventilation ; (*b*,) Elementary statistical methods ; (*c*,) Municipal hygiene and hygiene of communities ; (*d*,) Statistics, orders, memoranda, model bye-laws of the Local Government Board, and the bye-laws in force in the administrative County of London.

Candidates must be twenty-one years and over, and must produce the usual certificate as to personal character, training, etc. ; and the evidence as to training must consist of :—

(1,) Employment as Sanitary Inspector or Inspector of Nuisances for *minimum* three years previous to Jan. 1st, 1900, in a sanitary district having a population of not less than five thousand at the last census ; *or*

(2,) Possession of certificate of instruction showing attendance upon lectures approved by the Board, and consisting of not less than thirty-two lectures supplemented by demonstrations.

The examination is to be thorough, as also the training, the object being to raise the standards required for the position of Sanitary Inspectors, who, as the right hands of Medical Officers of Health, have the power of doing much good in connection with Public Health administration throughout the country, the duties of the two sets of officers being totally distinct, however.

THE TEACHING OF HYGIENE IN SCHOOLS.

Much attention has been given to the necessity that exists for educating the rising generation in the elements of hygiene and domestic economy, such subjects to be made obligatory in all standards of elementary schools, and not left (as at present) as optional ones, limited to certain standards (IV and upwards). That such course of instruction is practicable without interfering with present arrangements, is shown by the fact that the Leicester School Board has for the last eight years successfully carried out such education in place of the ordinary parsing and analysis. Miss Alice Ravenhill, of the Health Society, lays down the four following principles as all-important in inculcating the truths of elementary hygiene :—

(1,) Simplicity of treatment ; practical demonstrations.

(2.) Progressive development of essential principles.

(3.) Suitability of the subjects taught for both boys and girls, and their adaptability for both urban and rural schools.

(4,) Necessity for making hygiene a grant-earning subject.

It appears that school managers have the power to select whatever subjects, beyond the three R's, they are pleased to teach, and what, therefore, is required is for the teachers themselves to be properly taught hygiene in their training colleges.

Closely connected with this subject of teaching hygiene are the

appointments of female health visitors, or missionaries, by Sanitary Authorities—appointments which are, fortunately, becoming more and more common, thereby enabling the elements of domestic economy to be taught at the homes of the poorer classes, or at mothers' meetings, etc.

TUBERCULOSIS AND ITS PREVENTION.

The crusade against consumption advances, and the general feeling is that the all-important preliminary is to educate the public in the necessity that exists for the efficient disinfection of the sputa of tuberculous patients, thereby destroying the one great source of infection; and, as a corollary, the suppression of public spitting. The views of the National Association for the Prevention of Consumption were clearly put forward at the Southampton Health Congress by Mr. Malcolm Morris, who emphasised the State aspect of the subject, *i.e.*, the prevention or eradication of tuberculosis amongst cattle by a careful use of the tuberculin test, with subsequent isolation and destruction of those cattle that react, with compensation as may be necessary. Meanwhile, all milk should be sterilised before being used as food, and the sale of infected meat strictly regulated. The Association is arranging for a National (British) Congress on Tuberculosis, to be held in 1901, under the presidency (in person) of H.R.H. the Prince of Wales.

Open-air sanatoria for the treatment of consumption should be established by British public authorities on the lines adopted already in America and on the Continent, as it is now generally agreed that such institutions have many advantages, direct or indirect, as stated by Sir R. D. Powell, as follows —

(1,) Lessons in self-management.

(2,) Habits of self-discipline and attention to hygienic laws, whilst those persons who have passed a certain length of time in a sanatorium, become, in their turns, centres of instruction in domestic hygiene, when they pass into the general community.

In regard to sanatoria, climate does not seem to matter much, provided a suitable and sheltered site be chosen, nor do even the amounts of rainfall and cold. Dieting (as to quantity as well as to quality) is all-important; indeed, abundance of good, sound food, air, sunshine and rest are the lines of treatment laid down and essential in all well-regulated sanatoria.

The results obtained from sanatorium treatment so far appear to be highly satisfactory, about a fourth of the patients being practically cured, and the rest much improved and relieved.

Before leaving this subject, it may be mentioned that sanatoria, if well conducted, are not a source of danger to the surrounding houses, nor to their occupants any more than are hospitals for consumption under the same conditions as to general management—a statement that has been officially made by the National Association recently in answer to a wide-spread apprehension entertained to the contrary by the public at large.

Another important matter in connection with tuberculosis is the notification of consumption and its necessity or otherwise. This matter has been discussed at congresses and meetings during the past year *ad nauseam*, but despite the strong advocacy of Drs. Newsholme and Niven, the general feeling amongst Medical Officers of Health is that the time has not yet come for notification—at least, compulsory notification—and this view of the Medical Officers appears to be that held by the majority of the outside public. It may be that, as time goes on and people become more and more educated as to the nature and dangers of such a disease as consumption, the public's view may change as to notification. It is a matter, however, depending upon the educating of the public, so that they will come to appreciate the dangers of consumption as a contagious and, therefore, communicable disease, and the consequent necessity for such a preventible disease being prevented. In public health matters, the public must learn to walk before running.

WATER CISTERNAGE.

Attention is being drawn more and more to the necessity for improved cisterns in connection with water supplies. Theoretically, it has always been held that with a constant service, cisterns were unnecessary, but, unfortunately, in practice this opinion has been upset, and it is now acknowledged that cisterns are necessary, even with the so-called *constant* service, which, in the majority of cases, is really intermittent, more or less. Admitting, then, the necessity for a cistern, what form of cistern is best? Clearly, one that is self-cleansing, and free from pollution (*a*,) from the atmosphere, or (*b*,) from the deposits in the water itself; and to fulfil these conditions a circular enlargement of the existing mains is all-sufficient, such enlargement to be of stout plate and capable of holding anything from 100 to 1,000 gallons, thereby forming a self-cleansing, air-tight receptacle for water.

THE EDITOR'S TABLE.

A Review of New Inventions, and Pharmaceutical and Dietetic Articles.

MEDICAL AND SURGICAL APPLIANCES.

Artificial Legs.—Mr. W. R. Grossmith, of 110, Strand, the well-known mechanist, has recently constructed an artificial leg of a very improved character. It is light and noiseless. When intended to replace the leg after operation above the knee, there is added a patent spring which gives a quick action in walking, but allows the leg to be at rest when the patient sits down. There are also many other improvements, either already made or which the talented inventor is completing, and we think our readers cannot do better than write to Mr. W. R. Grossmith when they have occasion to supply a gap made in the human anatomy by surgical operation.

As it is anticipated that the present war will result in a number of our gallant defenders requiring artificial legs, Mr. K. R. Schramm, of 24, Great Castle Street, Oxford Circus, London, W., has, at the suggestion of Mr. R. Barwell, given great attention to the manufacture of a sound and durable artificial leg at as small a cost as possible. That it is serviceable is instanced by the fact that miners, railway men, and others can not only perform their duties with its aid, but can get quickly over the ground, and Mr. Schramm's reputation for excellence of workmanship is a guarantee that repairs will not be necessary from any ordinary wear and tear. The cost of these legs for amputation below the knee is £3 10s., and above the knee £4 4s.

Aseptic Cabinets.—Messrs. R. Sumner & Co., of Liverpool, have brought to our notice a large number of sterilisers and cabinets specially fitted both for hospital and for the use of private practitioners. They are of good workmanship, are air-tight, and, above all, the firm offer them at prices which make their acquisition more possible to the practitioner than many of these productions have been in the past. We have not space to describe them, but Messrs. Sumner & Co. supply a special list well illustrated which is well worth perusal. We have selected No. 156 as the best suited for the use of the private practitioner.

Atomiser (Post-Nasal).—Among the many varieties of atomisers produced by Messrs. Slate Bros., of 2, Dyer's Buildings, Holborn Circus, E.C., we have been particularly struck with one which consists

of a single and straight tube like a large probe, which can be passed through the anterior nares, and a spray applied to the post-nasal cavity. We prefer this method of treatment to the use of nasal douches, which are not always free from danger, and we have found no form of spray better adapted for this purpose. As it is equally adapted for use as a spray for throat or any other purpose, it is a very practical instrument for general use.

Atomiser, Politzer Air Douche, and Eustachian Catheter (combined).—We described a capital spray produced by Mr. Rogers last year. It has now been so altered that the bellows of the spray can be used for a Politzer air douche, or for inflating the tympanum through an Eustachian catheter, the change being effected instantly. Each combination is practical and effective. It is also economical as regards cost and space required. The only further improvement needed is a box with a fitted place for each part of the appliance, so that they may be always kept together. It can be obtained of Mr. Frank A. Rogers, of 327, Oxford Street, London, W.

Axis Tractor (Le Page's).—Dr. Le Page's axis tractor (*Fig.* 54) has been known and appreciated by the profession for some years. It facilitates the use of the forceps by giving the practitioner more power and control over the process of traction. Dr. Le Page has recently invented a new handle for his tractor which improves the usefulness of the instrument. It is simple and portable, and can be used with any ordinary long forceps. The cost is only 8/6, and Messrs. R. Sumner & Co, of Liverpool, are the manufacturers.

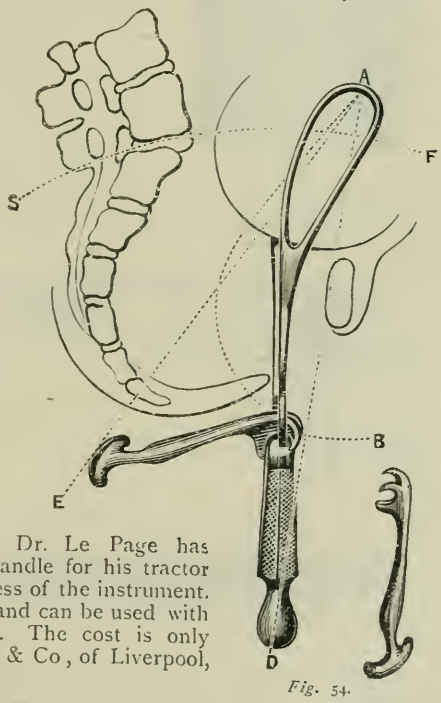

Fig. 54.

Belt Corset (The "Domen").—The "Domen" belt corset (*Fig.* 55) is an actual combination of a corset with a belt, and has all the advantages of each without the inconvenience entailed when the separate articles are worn. The belt is of firm construction in front, but has elastic sides over the hips, which not only provide

sufficient flexibility, but also ensure perfect adaptation to the figure. The corset has an elastic insertion down each side under the arms which allows due freedom to the respiratory organs, and thus to a great extent minimises the possibility of too tight lacing, with its injurious results. This combination possesses the great superiority over the ordinary corset, that it prevents the down-pressure on the internal organs which even moderately tight lacing involves, while it gives efficient and valuable support both to the spine and to the abdomen. No thoroughly practical substitute for separate corset and abdominal belt has ever before been designed, uniting the maximum of support and comfort with perfect elegance and shapeliness. It is manufactured by the Domen Belt Co., 456, Strand, W.C., and has all the excellence of construction and material for which the Company are noted.

Fig. 55.

Bed Table.—The novelty of this table (*Figs.* 56, 57) is the method by which the legs fold under when not in use; it therefore takes up very little storage room. As an additional comfort in cases of sickness

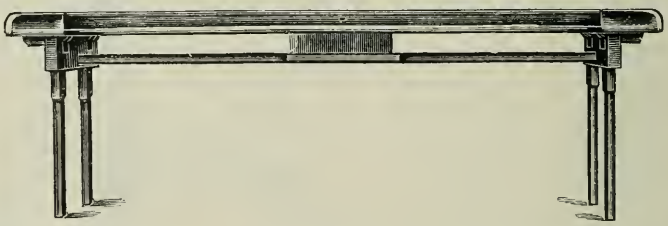

Fig. 56.—Open.

Fig. 57.—Closed.

and convalescence it is invaluable. There is no more portable Bed-table to be found. It is sold by Messrs. R. Sumner & Co. in canary wood, walnut, or stained walnut for 7/6.

Binaural Stethoscope with Miniature Chest Piece.—The chest piece of this instrument (*Fig.* 58) measures only 1 in. by 1¼ ins. The spring portion of the ordinary stethoscope is replaced by indiarubber tubes

to which vulcanite ear pieces are attached, the advantages of which we have previously called attention to. This is perhaps the least bulky of all the binaural stethoscopes at present known, and is certainly very comfortable in use. The disc of the chest portion is composed of vulcanite, and has the property of magnifying the sounds transmitted to it. When this is used the effect is practically the same as a phonendoscope, but this can be instantly removed and the instrument is then a most efficient stethoscope. There is a capital arrangement at the back of the chest piece for keeping the instrument in position, and adds greatly to its utility. Messrs. R. Sumner & Co. sell this instrument at 5/6, and we can recommend it as a thoroughly efficient instrument and of special advantage as regards portability. We give it the first place amongst the instruments used for auscultation on these grounds.

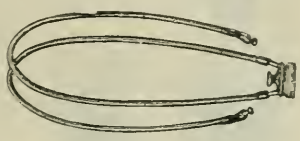

Fig. 58.

Bone Drill.—We illustrate here a new form of bone drill (*Fig.* 59), such as is used in wiring patellas and bones in general, and it will be appreciated by those who have experienced the difficulty of passing the wire in such cases after withdrawing the drill. One of the chief points claimed for this instrument is the screw-like cutting point, which protrudes beyond the cannula in the same way as an ordinary trocar. The whole length of the screw surface has a cutting edge similar to

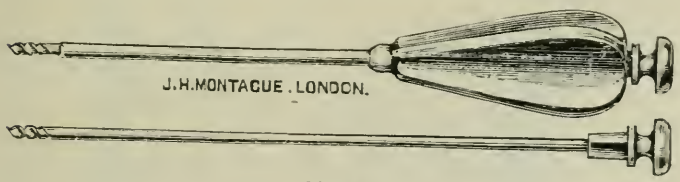

Fig. 59.

an American drill, which, after boring the hole (the drill being withdrawn) the wire is passed easily through. The drill is perfectly rigid whilst in use, being kept so by means of an extra square piece of metal at the end of drill which fits into a socket at the end of the metal handle. The principle of these drills has been found very satisfactory in keeping bones from splintering during operation. They are made in four sizes at the suggestion of Mr. G. R. Turner, of St. George's Hospital, and are manufactured by J. H. Montague, 101, New Bond Street, W.

Bottles in Special Metal Cases.—These bottles (*Fig.* 60) supersede the older pattern in which the case is made of boxwood; it is cleaner and takes up less space, the metal being thinner than the wood. An important addition consists of a spring placed inside the top of the

case which keeps the stopper of the bottle in place and prevents leakage. The sizes range from ½ oz. to 6 ozs., and the prices from 2/- to 5/-. Messrs. R. Sumner & Co., of Liverpool, have adapted a sprinkler tube to the above bottle, and thus formed a chloroform drop-bottle on the principle of Esmarch's. This is decidedly the best chloroform bottle we have ever seen. The price is 6/6.

Fig. 60.

Bozemann's Tube.—Messrs. Ferris and Co., of Bristol, have sent us a new form of Bozemann's tube for intra-uterine irrigation, which is furnished with a series of very fine perforations at the uterine extremity which causes the injection to be presented in the form of a very fine spray, so that no shock is given to the sensation of this delicate organ. The tube provides for the escape of the fluid through the cervix by a simple curved wire on the posterior curve of the tube which keeps the cervix patent during the injection. It is in every way a serviceable instrument.

Bristol Blister.—This is a name given by Messrs. Ferris & Co., of Bristol, to a preparation of cantharides spread as a plaster. We believe that this is the only way in which a blister should be used, as it enables us to fix with certainty the size of the blister and avoid any of those mishaps which may occur when liquid vesicants are used. We have tested Bristol Blister and find that it raises a vesicle within a few hours with practically no pain. It is very much superior to the ordinary "emplast. canthar.," causing less irritation, and acting more quickly. Messrs. Ferris also supply this plaster on reels, which is the best way of preserving it, and these reels fit their patent caddies.

Catheter Steriliser (Metal).—The problem of how best to render a catheter aseptic has been much debated, and many appliances have been devised. We consider the last invention, which has been brought under our notice by Messrs. R. Sumner & Co., of Liverpool, to be the most simple and practical of all. It consists of an oval metal box about 6 ins. in length, the lower part of which serves as a boiler. When heat is applied, steam issues from two jets, one of which empties itself into the catheter and the other into the body of the steriliser; by these means the catheter is thoroughly steamed both inside and outside. The apparatus is furnished with container for spirit and other accessories. The cost of the whole appliance is 18/-. We think that every hospital and practitioner should possess this appliance, as the sterilisation of catheters is perhaps the most important of all aseptic requirements.

Catheters (Pocket Case for).—We have wanted such a case as this for some time. It is always as well to have a few catheters with one when called to a case of emergency, and they are not convenient

things to carry. Messrs. R. Sumner & Co., of Liverpool, have introduced a pocket case 4 ins. long which will hold three or four flexible catheters. The case is made of papier-maché, and costs 1/6.

Chloroform Inhaler.—We illustrate here another new chloroform inhaler (*Fig.* 61) designed by Dr. George Flux. The drawing fully shows the construction. The inventor's design is to give the anæsthetist more complete control over the strength of the vapour the

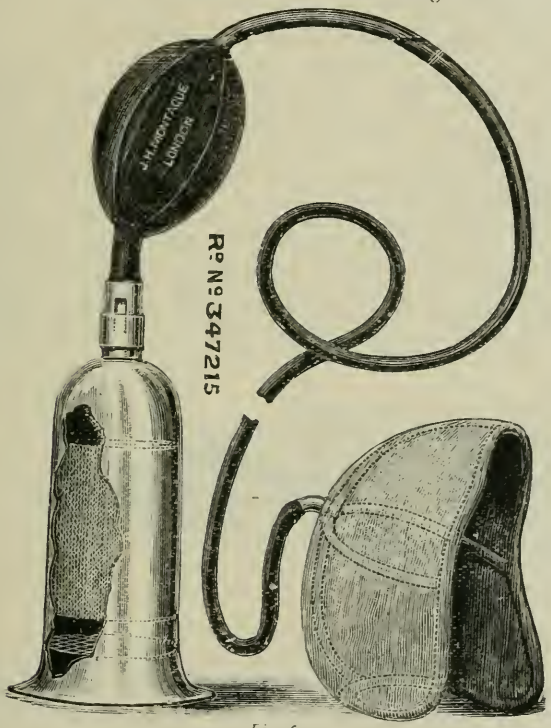

Fig. 61.

patient inhales, it being intensified or diluted by the frequency with which the bulb is compressed. Mr. J. H. Montague, of 101, New Bond Street, London, W., is the manufacturer.

Clinical Chart (Improved).—This is specially designed for the treatment of consumptive cases, and is improved and amplified on one used at the Hohenhonnef Sanatorium by Dr. L. C. Weatherly. It is more than twice the size of an ordinary chart, and lasts one week instead of three ; this is due to the fact that it is scaled for taking the

temperature every two hours during the day and night. This proceeding is not very frequently needed in consumptive or any other class of case—at least we hope so. We note that the normal temperature is marked at 98·6 ; the ordinary temperature charts give it at 98·4 ; our own clinical observations would fix it at 98·2. By the introduction of a two-coloured background to represent the hours of daylight and dark the chart has a very handsome appearance. It is made by Messrs. Ferris & Co., of Bristol.

Cranial Osteotome Worked by an Electro-Motor.

F. W. Robinson, M.D., Aber., F.R.C.S., Eng.

The cranial osteotome figured below (*Fig.* 62) was designed by me before I had read of Cryer's instrument, which also embodies the principle of the drill. Apart, however, from this, it possesses so many features of its own that I venture to think it deserves separate notice. The drill, guard, and button are much the same as in Cryer's instrument ; the depth of the drill, however, is carefully regulated so as just to engage the skull at its thickest part. In making experiments with drills of various kinds I found those possessing smooth surfaces gave much the best results. Drills with parallel, straight or curved cutting blades were apt to get clogged with the soft tissues, and ceased to cut. The triangular bayonet-shaped drill was therefore chosen. The distinctive parts of the instrument are those designed to obviate friction and maintain steadiness. These results are obtained by the general shape

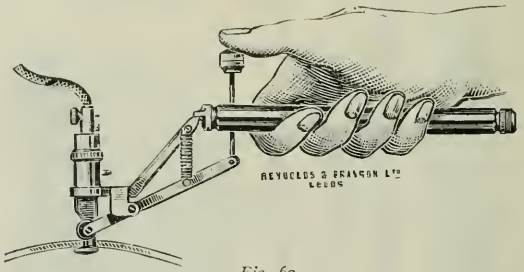

Fig. 62.

of the instrument, and also by the pair of wheels carried on a movable axle. When in action these wheels run on the outer surface of the skull, the button lying on its inner surface, whilst the drill is applied to the bone between. In addition to this, the axle is made self-regulating by means of the spring. When the button attached to the lever is pressed it raises the axle with the wheels as high as may be necessary to expose sufficient of the drill to apply to the edge of the bone. Once the drill has made its groove in the bone and the wheels rest upon the surface of the skull, the spring action renders the axle adaptable to the varying thicknesses of the bone, so that at all times a minimum portion of drill is exposed, and the button is kept closely applied to the inner surface of the skull. In this way the dura mater

is protected from injurious pressure. The spindle carrying the drill is hollow, and a tube from an irrigator attached to its side conveys an antiseptic lotion to its interior; by this means the drill is kept cool when in action. Manufactured by Messrs. Reynolds & Branson, Leeds.

Ear Trumpets.—The construction of ear trumpets encourages great variety of design. There are the patients who want a trumpet which will attract as little attention to itself as possible, and which it is hoped, when discovered, may be mistaken for something else; and there are the patients who require an ear trumpet which emphasises sound and enables them to hear better, regardless of form and appearance. There are patients who look to ease of carriage and compactness as the ideal of a trumpet, and there are some who hear better with one form than another. On the whole they are difficult to please, and the surgical mechanist who devotes himself to this line must construct a great variety of instruments to meet the individual tastes and peculiarities of his customers. This is what Mr. Hawksley, of 357, Oxford St., London, W., has done. He sends us a great variety of instruments each representing some particular advantage which it would be difficult to describe in detail within the limits of our space; and we think it better to advise our readers to ask Mr. Hawksley for a small book, of which he sends us a copy, in which all the different forms are described and illustrated. We think a book of this kind is very useful for reference, and will enable the practitioner to assist his patient in the choice of a suitable instrument.

Envelopes for Dressings.—A transparent gelatine envelope (*Fig.* 63) is the latest way of carrying dressings in the surgical bag. The contents being always visible while hermetically sealed, it is about as inexpensive and practical a method as we have seen. We have ordered some of these envelopes for our own use, and our readers will probably like to do the same. Messrs. Reynolds and Branson, of Leeds, have introduced them to us.

Fig. 63.

Exploring Syringe (Improved). *Christopher Mayhew, M.R.C.S.* This syringe is designed to overcome inconveniences too often experienced when using the ordinary apparatus, such as blocking of the needle, either during its insertion, or by particles in the fluid which it is intended to withdraw. It will be seen from the sketch (*Fig.* 64) that it consists of a hollow needle D, fitted with a pointed trocar which passes through an air-tight stuffing box C, and is provided with a head A. This part of the apparatus, which is similar to that supplied with some aspirators, is fixed parallel to an ordinary cylinder and piston, the needle D having a clear way through to the lower end of the cylinder. When it is required to use the syringe for exploring

purposes, both the trocar and piston are pushed right in by means of the heads A and B respectively. The needle is then inserted and the trocar pulled out a few inches by means of the head A, so as to leave the needle open to the cylinder. The piston can now be gradually drawn out. If, when the piston is part of the way up the cylinder,

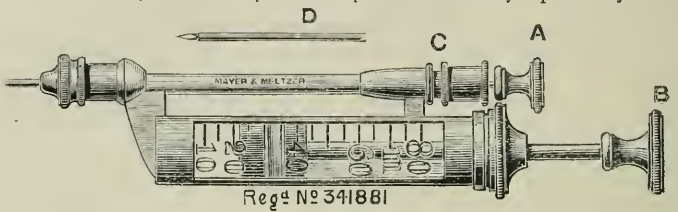

Fig. 64.

the needle should become stopped up, the trocar can be pushed down to clean it. The apparatus is so designed that it can be taken to pieces for sterilising and cleaning. [We have not tested this syringe, but the principle appears good. Messrs. Mayer & Meltzer, of Great Portland Street, London, are the makers. Ed.]

First Field Dressing.—The Liverpool Lint Company have sent us samples of the first field dressing which they are supplying for the Imperial and Auxiliary forces already at or going to the Cape. The dressings consist of a wool pad, a square piece of gauze and waterproof, bandage, and safety pin. These are enclosed in a small waterproof bag and covered again with a cotton bag. On the outer side of each of these bags there are printed directions for use. Each soldier carries one of these in his pocket on active service, so that immediate attention can be given to a wound under aseptic conditions on the battle-field. This arrangement has much to do with the rapid healing of gunshot wounds, which have been a noticeable feature in the present war. A few of these dressings would never be out of place in the surgical bag of the general practitioner.

Hæmodynamometer.—This portable clinical instrument was employed by Dr. George Oliver in an enquiry (physiological and clinical) on the blood-pressure (see "Physiological Journal," 1898, "Edinburgh Medical Journal," 1898, and "Clinical Journal," 1899). It was designed with the view of rendering the observation of the blood-pressure in man as easy and as accurate as that of other physical signs, such as the temperature by the thermometer, the breathing, heart sounds, etc., by the stethoscope, etc.; the principal aim in its construction being to facilitate clinical observation and research in a field hitherto imperfectly cultivated by the unaided sense of touch. This instrument records the precise degree of pressure exercised when it is pushed against any body; so that if it is pressed against an artery until the pulsation is stopped, it can be ascertained how much force was necessary to compress the artery, and thus an indication of

the blood-pressure is obtained. There are so many other factors which may increase the pressure required, independent of the blood-pressure, that we could not attach so much importance to the register of the instrument as we should to the tactile sense of the finger placed upon the pulse when gently compressing it. The personal equation is less in the latter case than in the former, but we cannot express the result of the finger pressure in figures which this instrument makes possible. Dr. Oliver claims that he can record the mean arterial pressure by this instrument, but after trying it according to his instructions we obtained such variable results on the same pulse that we could attach no importance to them. We think that any instrument which registers the faintest pressure, and in the use of which we have to use and retain pressure by the hand for a certain time, will show variations quite independent of the pulse or of anything else but the involuntary movement of the operator's hand owing to the difficulty of retaining any uniform pressure. By practice this might be attained, but it is more than probable that when we met the resistance of the blood-pressure and were at the same time watching the indicator of the dial for the evidence of our own pressure, that the movement of the indicator which resulted would represent an involuntary adaptation of the one to the other plus the expected effect produced by unconscious cerebration. We cannot regard an instrument whose records are widely alterable by a pressure of the operator's hand, so slight as not to be within the sphere of consciousness, as useful in clinical work.

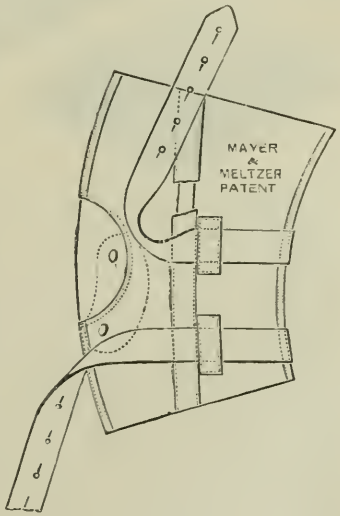

Fig. 65.

Knee Cap (Enderby's).—This is an improved surgical knee cap (*Fig.* 65) intended to be worn when the knee has suffered injury, such as strain, rupture of the cartilage, or fracture of the knee cap. It consists of a leather bandage to pass round the leg, and is laced at one side. Strips of whalebone or flexible metal are inserted so as to give a certain amount of rigidity. Within the knee-cap two pads are inserted of steel covered with soft leather to support the cartilage, and two straps pass completely around the bandage. By means of these straps the degree of pressure of the pads can be regulated. The knee-cap is very light, only weighing six ounces. It is manufactured by Messrs. Mayer & Meltzer.

Midwifery Forceps.—Messrs. Ferris & Co., of Bristol, have sent us a pair of forceps which appear to comply with all the requirements of modern progress. They are wholly of metal, so that they are easily rendered aseptic, and there are no crevices in the construction where germs or moisture can lurk. The curves of the blades and the handles are precisely adapted to the mechanical requirements, so that they should be easy to introduce. Although made of metal, they are not heavy, and we can pronounce them as generally serviceable a pair of forceps as the practitioner could possess.

Nasal Plugs (Lake's).—These plugs are made in moulded rubber, and are for use after operation of the septum, whether for deflection or removal of spurs. Being of soft material, they can be worn for several days without inconvenience. The term "plugs" is not happy; we should describe them as flexible plates, about $1\frac{1}{2}$ ins. long, $\frac{1}{2}$ in. in breadth, and $\frac{1}{8}$ in. in thickness. They are rounded and shaped to fit the contour of the nasal passage. Messrs. Mayer & Meltzer are the manufacturers.

Needle Case.—This is a small, flat, metal box (*Fig.* 66) for holding from six to twelve needles. The box can be boiled and the needles rendered aseptic very conveniently. Messrs. Reynolds and Branson, of Leeds, are the manufacturers.

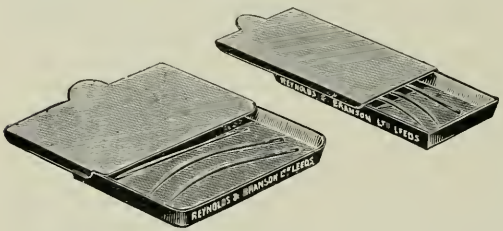

Fig. 66.

Needle-Holder (New).—We have noticed from time to time many needle holders, some simple and some of very ingenious and complicated mechanism, but we do not think that any one of them will compare in practice with the new needle-holder sent to us by Messrs. Ferris & Co., of Bristol. The principle of the invention is that when the instrument is not in use the blades are firmly closed, and when it is necessary to open the blades to insert a needle, all that is necessary is to increase the grip upon the instrument, and the blades open to receive it. The grip is made by the hand (not the fingers), the handle of the instrument being a thick curved spring, the sides of which are nearly 2 ins. apart, so that good purchase is afforded to the hand. The needle when inserted is at a right angle to the axis of the handle, and as the insertion of a needle implies that the point should be carried through a semi-circle against more or less resistance, the disposition of the instrument gives good mechanical power and facility in carrying out the action. The mechanism is very simple, but it is very perfect, and we see no possibility of its getting out of order, nor do we find that it has the fault of many needle-holders, of breaking the needles. We strongly recommend this instrument.

Needle Holder (Aseptic).—Messrs. R. Sumner & Co.'s needle-holder (*Fig.* 67) is made on the principle of the blades being always closed and in a position of grip, unless pressure is made on the handle. We believe this to be the right mechanical method, if the spring is sufficiently

Fig 67.

well tempered to retain its power indefinitely. We are sure Messrs. Sumner & Co.'s instrument has this quality, and it is further arranged that every part can be disconnected for purposes of sterilisation. It is a most practical instrument in every way, and one which we can recommend to the practitioner with complete confidence. It costs 9 -.

Operating Gloves (Llyn Thomas's).—These gloves are made of thread, and are easily rendered aseptic by boiling. A fresh pair is used for each operation. Very thin rubber gloves are used for septic cases. Neither of these gloves interfere to any extent with the tactile sense. The thread gloves are supplied at 1 6 and the rubber at 3 6 per pair. They are produced by Messrs. Mayer & Meltzer.

Ophthalmic Dressings (Sterilised).

K. C. Chetwood-Aiken, M.B., C.M.

By the aid of a portable steriliser it is an easy matter in private practice to render aseptic the various instruments required for an ophthalmic operation ; but to be thorough, the sponges used for removing blood, lens matter,-etc., and the pads of Gamgee tissue applied as a dressing, should equally be placed beyond suspicion, and this is less simply brought about. The following method will, I think, be found to answer the purpose, besides being a great saving of time and trouble. I am well satisfied with the manner in which Messrs. Ferris & Co., of Bristol, have carried out my instructions. A number of circular pads of absorbent tissue are cut and placed in a tin, each pad being separated from its fellow by a leaf of paper. To these is added a tray containing "swabs," or sponges, made of small rolls of lint, the whole being then placed in a suitable steam steriliser. Here a pressure of 20 lb. to the square inch and a temperature of from 120° C. to 130° C. are produced and maintained for a sufficient time to ensure absolute sterilisation. The tins are then removed and hermetically sealed. The form of tin employed is similar to that used by Messrs. Wills & Co. for putting up tobacco and cigarettes, and is opened in a like manner by a cutter in the cover. Each tin contains twenty pads and a sufficient number of swabs for an operation. By this means the surgeon procures his dressings ready cut, sterilised, and packed—a great convenience in emergency operations ; the pads retain their shape and do not adhere to one another, and each can be

removed singly without touching the remainder. The price of the tins is 18/- per dozen.

[We have examined the dressings as supplied by Messrs. Ferris & Co. and consider that the author's very practical idea is excellently carried out. Ed.]

Perineal Stop. *C. Hamilton Whiteford, M.R.C.S.*

The accompanying diagram (*Fig.* 68) shows a Jacques' catheter fixed in the urethra from the perineum after Wheelhouse's external urethrotomy, by what I have termed a "Perineal Stop." It has been well made for me by Messrs. Reynolds & Branson, of Leeds. It is used as follows: After external urethrotomy has been performed, a full-size Jacques' rubber catheter is passed along the whole length of the urethra, if

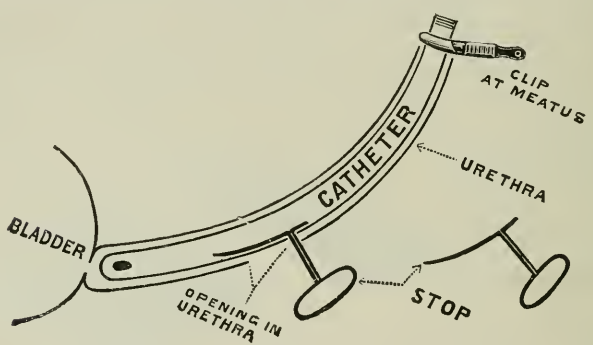

Fig. 68.

necessary, by means of a stillette, stopping just short of the bladder. The portion of catheter lying in the angle of the urethral incision nearest the pubes is drawn out by forceps through the perineal wound, and an incision $\frac{1}{12}$ inch made in the long axis of the catheter. Into this minute opening the "Stop" is inserted, the long arm towards the bladder. The catheter is then drawn towards the meatus as far as the "Stop" will allow, and a clip on the catheter close to the meatus completes the fixation. To empty the bladder the clip at the meatus is removed and the catheter pushed on into the bladder the necessary $\frac{1}{2}$ or $\frac{3}{4}$ of an inch. I have retained a catheter by this means for three weeks, only removing it once a day for cleansing.

Plaster Mulls.—We have lately received from Messrs. P. Beiersdorf & Co., of Hamburg, samples of the plaster mull recommended by Prof. Unna in the treatment of various skin affections. The number of formulæ and the various strength of drugs which can be obtained in this form are very great, and show that these plasters must be very largely employed by our German confrères.

In their manufacture they differ from the plasters of British manufacturers by their greater flexibility and adaptability to the parts to

which they are applied. This appears to be largely due to the choice of the material on which they are spread ; some of them are spread on gauze, and others on a thin material of great elasticity. They are all self-adhesive, and free from resin.

The same firm also supply, under the name "Paraplasts," a new kind of impermeable plaster on cotton fabric, adhesive on one side, and vulcanised. In colouring it resembles the skin, so that when applied to the skin of the face or hands it is unobtrusive. These plasters are used for the continuous treatment of eczema, psoriasis, etc. Thus, when the part has been painted with chrysarobin traumaticin, the paraplast is applied and left *in situ* from eight to ten days.

Plugging Gauze.—Messrs. Ferris & Co., of Bristol, have introduced a special gauze for the purpose of plugging cavities, such as maxillary and mastoid arteries, when it is important that no small threads or portions of the plugging material shall be left behind when the dressing is removed. The gauze is sent out in 12-yard spools, varying in width from $\frac{1}{2}$ to 3 inches. These spools fit the "Ever Ready Caddies," which we noticed favourably a few years ago, and which remain the best method of preserving dressings. We have examined this gauze and find that, owing to having a selvedge, it is particularly adapted for its purpose, as well as convenient. It is prepared plain, or impregnated with carbolic acid, double cyanide, iodoform, and sublimate.

Reading Desk.—This is intended for invalids and others who want to read in bed, or while lying upon a couch. To many such appliances there is the objection that the reader must accommodate his eyes to the lines of print. This has been obviated in the new desk (*Fig.* 69) by a simple arrangement which permits the desk to be accommodated to any angle, so that reading may be carried on with ease in any position the reader may assume. It has been introduced to our notice by Messrs. R. Sumner and Co., of Liverpool, and we can recommend it for the use of invalids. It costs 8 6.

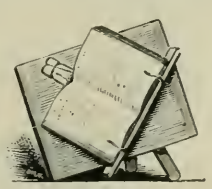

Fig. 69.

Simplex Hypodermic Syringe.—We have been much disappointed with many of the hypodermic syringes introduced during recent years. They are excellent when new, but break down in practice, especially when they have not been in use for some time. The latest (*Fig.* 70), introduced by Messrs. R. Sumner and Co., has a piston of glass provided with a packing of asbestos which acts as a plug and effectually prevents fluid from passing beyond it. As asbestos has a great affinity for moisture it will swell up immediately, although the syringe had not been in use for some time, which is not the case with the india-

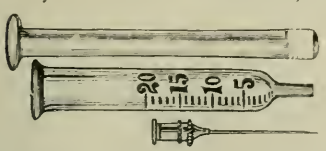

Fig. 70.

rubber plugs. On the other hand, asbestos is liable to wear out with frequent use. Messrs. Sumner & Co. have foreseen this, and the case includes a reel of asbestos for renewing the plug. This is practical and enables us to highly commend it. It is a cheap syringe ; two needles are included in a metal case for 5/-.

Sputum Flask.—An improved sputum flask has just been introduced by Messrs. Ferris & Co., of Bristol, differing only from those previously noticed in the fact that it is made of aluminium, and being much lighter than those made of other materials can be most conveniently carried in the pocket. The price is 5/-

Steriliser (Tubular).—For sterilising pocket or other small instruments, Messrs. R. Sumner & Co., of Liverpool, produce a compact and portable case barely 4 ins. long. The lamp portion fits into the body of the steriliser, and when withdrawn is fastened below it by means of a spring clip. The wick is of asbestos, and the lamp is provided with a rubber-lined cap which prevents spilling of the spirit. This only costs 6/-, and is useful for a number of purposes. We have tried it, and can recommend it as well worthy a place in the surgical bag of the general practitioner.

Straps for Lithotomy Position. *Reginald H. Lucy, F.R.C.S.*

Finding the crossbar of Clover's crutch to be in the way of Wheelhouse's staff and similar instruments when operating on the perineum, I have devised a simple and portable set of straps (*Fig.* 71) which I find in practice to be quite as efficient as Clover's apparatus : (1,) A stout leather strap padded for its middle third, and furnished at either end

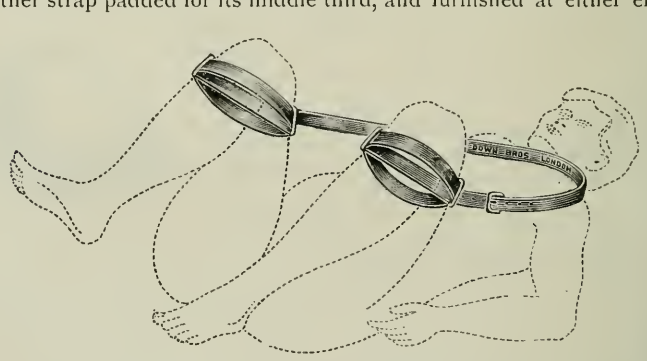

Fig. 71.

with a strong buckle. This is placed obliquely behind the patient's neck, one end being brought over one shoulder, while the other is brought out under the armpit of the opposite side, precisely as is done with Clover's crutch ; (2,) The remainder of the apparatus consists of two flat bars, each 4 inches long, padded and furnished at either end with swivelling wire loops, and at their outer ends with a padded

leather strap. To apply the straps—the patient's legs being flexed on the thighs—the flat bar of one strap is placed well up into the ham, the strap on its outer end is carried round the thigh above the knee-joint, through the loop of the inner end, and thence round the leg, from within outwards, just below the head of the tibia, and its end being passed through the outer loop is buckled to the corresponding end of the neck strap. The same routine is followed with the other leg strap, and it will then be found that the more the straps are pulled taut at the neck strap buckles, the more fully will the patient's legs be rotated outwards by the lever-like action of the flat bars, and the more completely will the thighs be kept flexed on the abdomen. The passage of sounds, catheters, etc., will now be found easy, there being no cross-bar between the knees. Messrs. Down Bros., 21, St. Thomas Street, Bow, S.E.

Suture Reel (Aseptic). —In this arrangement the outer case is made of silver, and the reel of glass. Ligatures of all kind may be sterilised by boiling. It is a convenient addition to the surgical bag. Messrs. Reynolds & Branson are the manufacturers.

Syringe with Continuous Flow.—Some years ago we noticed a new invention in the form of an enema syringe which differed from all others in the fact that it provided a continuous stream of water, instead of the intermittent jets to which we are accustomed. We spoke in the highest praise of this instrument after a careful trial, and, in fact, we have still one of them in use, which we have particularly cherished because soon after our notice was written the syringe was withdrawn from sale, and became unattainable. We learn from Messrs. Sumner & Co., of Liverpool, that the difficulties of a purely trade character have now been removed. They present us with the syringe (*Fig.* 72) packed in a neat case, furnished with various tubes adapted

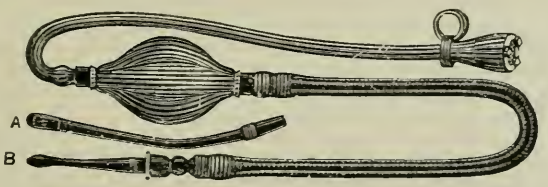

Fig. 72.

for its use for injections of the vagina, bladder, ear, and for rectal injections. We believe that there is no other syringe so useful to the practitioner as this, and it is fitted up in a way which enables it to be used for any kind of condition when a continuous flow of water is desired. It is an ideal ear syringe, as well as most perfect enema. We hail with satisfaction the disappearance of the difficulties which have deprived the profession of the use of the instrument for so long.

Tonsil Guillotine.—The accompanying sketch (*Fig.* 73) illustrates a new form of tonsil guillotine, which has the following advantages :—

The blade being circular and revolving, can be moved round, by which means a new cutting edge can be obtained for each operation. By a simple screw arrangement at the end of the guillotine, the blade can be reversed as desired ; the central spring which controls the movements of the blade is shaped at one end as a screw driver, so that any screws can be altered at will, and the handle being tubular, is very useful for carrying small accessories when operating at patients' homes. It is made entirely of metal, nickel-plated, and can thus be easily sterilised. Mr. J. H. Montague, 101, New Bond Street, W.

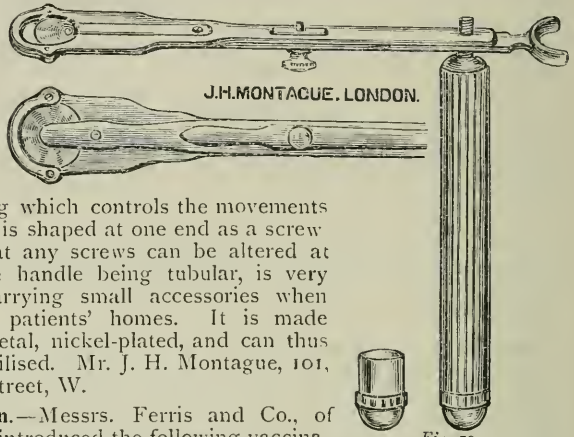

Fig. 73.

Vaccination.—Messrs. Ferris and Co., of Bristol, have introduced the following vaccination pads to meet the requirements of public vaccinators. They are all well-made, and are well adapted for either public or private practice :—

The *Bristol* is soft and absorbent, easily applied, and kept in position by tapes. Each is in an envelope, and sold in boxes of one dozen, at 1/4.

Self-adhesive Pad No. 10.—This is gauze-faced, absorbent, with protective backing and ring of self-adhesive plaster for fixing. Each is in an envelope, and sold at 2/- per dozen.

Self-adhesive Pad No. 20.—This has a plain absorbent centre, with self-adhesive margin. This pad is largely used by public vaccinators who require a cheap and efficient pad, easily and quickly applied. Sold in boxes, at 1/3 per dozen.

Messrs. Ferris also supply an antiseptic pad, impregnated with boric, sal alembroth, and sublimate. These are 1/6 per dozen.

Weighing Machine (Stand for).—We noticed two years ago a small weighing machine which cost a guinea, and was very practicable and reliable. From extensive further experience with this machine we can confirm this view, and we are glad to see that Messrs. R. Sumner & Co. have added to it a stand which enables a patient to sit while being weighed. We have not personally found it inconvenient to the patient to stand during the act, but we have found it a little trouble to stoop down ourselves to observe the weights ; and as this stand obviates this, we consider it an all-round advantage. The stand costs 16/-. They also have produced a height measuring standard for fixing to the machine, which is a useful addition. The cost of this is 13/-.

PROGRESS OF PHARMACY.

Anti-tussin.—This is hardly a name that will recommend itself to our medical readers, but it is chosen instead of the actual name Defluordiphenyl, incorporated in the form of an ointment. It represents an organic form of fluorine which, in addition to its antiseptic properties, possesses the power of acting as a sedative to the vaso-motor nerves. It is claimed for this remedy that when the ointment is well rubbed into the neck and chest of a patient suffering from pertussis there is a rapid diminution in the frequency of the paroxysms of coughing. Vigorous rubbing is considered necessary to produce the results. It is also said to be of value for inflammatory affections of the "neck, larynx, and throat," used in the same manner. Messrs. Thos. Christy & Co., 23, Lime Street, London, E.C., are the agents.

Anytin and Anytol.—As a result of researches made by Helmers some years ago on the active principle of ichthyol, further investigations have been made on the preparation of sulphonic compounds by the action of sulphuric acid on certain mineral oils, resin oils, and other hydrocarbons. In this way some interesting compounds, possessing remarkable properties, have been prepared. Perhaps the most important property of these sulphonates of hydrocarbons is that they are capable of rendering certain insoluble substances soluble in water. This capacity varies with the hydrocarbon employed. Eventually it was found that hydrocarbons containing about 10 per cent. of sulphur chemically combined are most suitable. If these hydrocarbons are treated with concentrated sulphuric acid, then neutralised with ammonia and the insoluble portion precipitated with alcohol, a product is obtained which possesses a comparatively very great solvent action on bodies insoluble in water. This ammonia salt, derived from a hydrocarbon and remarkably rich in sulphur, is called by Helmers "anytin," and it is this substance which appears to possess in a remarkable degree the property of rendering substances otherwise insoluble in water soluble, and preparations thus made soluble are called "anytols." Thus phenol converted into soluble form by means of anytin is called "phenol-anytol." The following anytols are now prepared, specimens of which have been submitted to us: cresol-anytol, containing 50 per cent cresols and 50 per cent. anytin; meta-cresol-anytol, containing 40 per cent. meta-cresol and 60 per cent. anytin; creasote anytol, containing 40 per cent. creasote and 60 per cent anytin; guaiacol-anytol, containing 40 per cent, guaiacol and 60 per cent. anytin: benzine-anytol, containing 20 per cent. benzine and 80 per cent. anytin; eucalyptol-anytol, etc.

It will be understood that we have by this method of preparation a number of powerful antiseptics which can be employed in greater strength than would be possible to prepare them in ordinary solution, so that when it is necessary to dilute them before application, they will remain in a more perfect state of solubility. A further enquiry into the effects of these new scientific products will be made, and those

wishing to investigate should communicate with Mr. Gustav Hermanni, Jun. (Ichthyol Co.), 20, High Holborn, London.

Asperin.—This name has been given to an acetic derivation of salicylic acid. It is intended to be used in place of the salicylates, and it is claimed for it that whilst of equal efficacy it has not the same depressing effects. The care given to the preparations issued by the Uberfeld Farbenfrabiken Co., Ltd., guarantee the value of this agent, which is worthy of a careful trial at the hands of the profession. We are glad to hear that this Company has changed its name to one more easily written and pronounced, *viz.*, The Bayer Co., Ltd., 19, St. Dunstan's Hill, E.C. We have previously noticed the value of Lycetol, Somatose, Salophen, and Tannigen, which are among the many products produced by this energetic and talented firm.

Bromaurum ($AsOBr_2AuBr_3$).—We described this preparation in our last issue. It is a combination of oxybromide of arsenic with bromide of gold. Messrs. Arthur & Co., 969, Berners Street, London, W., have recently performed some experiments which lead them to think that this remedy will prove very useful for rheumatism. Their experiments are chiefly chemical, and further investigation is necessary. We should have tested these facts clinically, but we had not a sufficient quantity of the preparation to enable us to form an opinion, but we shall make some observations when we receive a further supply, and report upon them if they prove satisfactory.

Carbolised Æthereal Soap.—An æthereal solution of soap is undoubtedly superior to the ordinary medicated soaps for thoroughly disinfecting and cleansing the hands of surgeons and obstetricians, and also for washing the skin at the seat of operation. The æther dissolves the fatty exudations of the skin and effectually removes any infection. It is very useful in washing children's arms before vaccination. It is sold by Messrs. R. Sumner & Co. at 2/6 per lb.

Chloralbacid.—Chloralbacid is a preparation of albumen and chlorine free from any unpleasant smell or taste. It contains chlorine only in intramolecular combination with albumen from which the chlorine is liberated in the body. Numerous experiments have proved that chloralbacid possesses a favourable action in chronic gastric catarrh and dyspepsia, especially where there is an insufficiency of hydrochloric acid. Vomiting ceases, the appetite improves, and the subjective and objective symptoms of the patient improve likewise. According to bacterioscopic examination the germs of fermentation and putrefaction in the stomach are quickly reduced under its influence. In consequence of its peculiar action in gastric diseases chloralbacid occupies quite a new position in materia medica. The dose is 6 to 12 tablets a day, and they cost 1/6 for 24. Thos. Christy & Co., 25, Lime Street, E.C.

Chloretone.—It is claimed for this new hypnotic that it is also a local anæsthetic, and that it acts as an anodyne in such cases as gastric carcinoma. Thus it has been used with success in place of

morphia. Its formula is $C_4H_7OCl_3$ and it is a beautiful white crystalline compound, having a camphoraceous odour and taste. It belongs to the fatty acid series, and is formed through the interaction of chloroform, acetone, and an alkali. The substance is sparingly soluble in cold water, very soluble in strong alcohol; and perfectly stable in the presence of dilute acids and alkalies. At body temperature it sublimes in the form of beautiful white glistening needles.

Administered per os, chloretone causes all degrees of hypnosis up to complete anæsthesia, dependent upon the amount given. Unlike other hypnotics, however, it does not depress the centres of the medulla, its principal action being upon the cortical cells of the brain.

The circulatory system is not materially depressed by chloretone even in large doses, as is the case when other hypnotics and anæsthetics are exhibited. The pulse rate is slightly lessened, the action of the heart, however, continuing of good quality. Kymographic tracings from the carotid artery show the blood pressure practically unaffected; in several instances it has been found somewhat higher at the end than at the beginning of the experiments.

Messrs. Parke, Davis & Co., supply the drug in the form of sugar-coated tablets (each 3 grains), from 2 to 6 of them constituting a dose. They also supply it in the form of crystals. A saturated solution of these in luke-warm water is an excellent anæsthetic for painful wounds.

Chondodendrine (Hewlett).—This preparation is one that is likely to take a prominent part as a remedial agent in the treatment of cystitis, and several other diseases of the mucous membrane of the whole genito-urinary apparatus, such as prostatitis and pyelitis. It is particularly indicated for the chronic cystitis and urinary maladies of old people, especially if there be feebleness of digestion and a tendency to costiveness, as it is slightly aperient in its action. A short interval after a few doses, its stimulating action on the kidneys is very marked, and exercises a soothing and tonic effect on the irritable bladder, the constant micturition and pain is lessened, and the thick, ropy, mucous urine is rendered brighter. Numerous clinical reports suggest its use in the phosphatic urine of vesical catarrh, and in uric acid diathesis it may be employed with asserted advantage, as it diminishes the excretion of uric acid and allays the vesical irritation. It is made by C. J. Hewlett & Son, 40-42, Charlotte Street, London, E.C.

Creasote and Tolu Palatinoids.—These contain 1 minim of Beechwood creasote, and ¼ gr. of Balsam of Tolu. Professor W. Sommerbrodt of Berlin compared his results in the treatment of 5,000 cases of phthisis by means of the simple beechwood creasote and the same creasote with balsam of Tolu dissolved in it, and observed that he got very much better results in the treatment of phthisis and of chronic catarrhs by means of the combination than with the simple creasote. He declares that the cinnamic acid contained in the balsam of Tolu is a very powerful bactericide, and is remarkably diffusible, and he states that probably the exceptionally good results obtained from the combination were to a large extent due to this factor. Messrs. Oppenheimer, 179, Queen Victoria St., E.C., are the manufacturers.

Epidermin.—This is a name given to what has been described chemically as Fluorxyol defluordiphenyl, made into an ointment with vaseline and lard. It represents an organic fluorine combination, and it is stated that, in addition to antiseptic properties, it has direct sedative action upon the vaso-motor nerves. It is strongly recommended by many German physicians as a remedy for the treatment of burns, and for unhealthy suppurations generally. Messrs. Thos. Christy & Co., 25, Lime Street, London, E.C.

Ferraloid.—This is a peptonised albuminate of iron intended for use in the treatment of anæmia and chlorosis. It differs from the albuminate of iron in the fact that it is quite stable and will keep indefinitely. It is readily absorbed and does good work clinically, so that we can reckon it a welcome addition to our resources. Messrs. Thos. Christy & Co., 25, Lime Street, E.C., are the agents.

Formalin Soap.—Formalin, as a disinfectant and deodorant, has rapidly won its way to the front rank, and it is only in accordance with natural demands that we should now have a formalin soap, both for toilet and shaving purposes.

It can be used with great advantage by surgeons before operations, as well as for ordinary toilet use. It is well made, unirritating, and possesses undoubted antibacterial properties. It is produced by the Formalin Co., 9 & 10, St. Mary-at-Hill, London, E.C.

Gelatin Capsules and Perles.—For elegance in pharmacy, combined with moderate cost, the productions of the Liverpool Medicinal Capsule Co. distinctly hold the field. The capsules are made of the flexible gelatin, and vary in size from small granules to large capsules, according to the amount of the medicament necessary for a dose. They are sent out in boxes, ready for dispensing, in such an attractive form that the dose of medicine, even if it is a nauseous drug, becomes an æsthetic pleasure, because its surroundings are so pretty, and the gelatin enables it to glide over the tongue without leaving any sense upon the palate of the flavour which lurks within. Thus, creasote is not a pleasant remedy to take, but a capsule of it is a thing of beauty, which the most fastidious patient will swallow with delight. If remedies are to be used in this form in general practice, it is necessary that the cost should not be excessive, and as 100 of these creasote capsules (1 minim) only cost 1/6, we do not think that they will fail to find appreciation on the score of expense. Capsules of cascara sagrada, each equal to 15 minims of the extract, cost the same, while those containing 30 minims cost 1/9. Pil. Blaud 1 pill costs 1/- per 100, two pills 1/6 per 100. This will convey an idea of the cost of using these capsules, and we think they will recommend themselves to both prescribing and dispensing physicians. Messrs. R. Sumner & Co., of Liverpool, are the wholesale agents.

Guaiacol Camphorate.—This new drug—a result of original work in the Wellcome Chemical Research Laboratories—is an acid salt of guaiacol and camphoric acid, both of which have been used independently with favourable results in phthisis; the former for its general

action in improving the nutrition of the patient, the latter for its power of lessening or arresting night sweats. Inferentially, therefore, the chemical combination of these two therapeutic agents should be extremely useful in the treatment of consumption, and on theoretical grounds alone would appear to justify a trial. One of its advantages over other guaiacol salts is that the camphorate is soluble in dilute alkaline solutions, and therefore readily absorbed in the intestines, whereas the compounds hitherto prescribed are sparingly soluble in dilute alkalies and accumulate in the intestines. The dose is 5 to 10 grs. in, or with water, twice or thrice daily after food. The dose may be gradually increased until 30 grs. three times daily are taken. The drug is supplied in powder or as a 5-gr. "Tabloid" product. Messrs. Burroughs, Wellcome & Co., Snow Hill Buildings, E.C.

Guaiacum.—This is not an easy remedy to dispense in a palatable form, and we feel obliged to Messrs. Blake, Sandford & Blake, of 47, Piccadilly, London, for bringing to our notice some flexible flattened capsules each containing 5 grains of pure guaiacum in powder (not compressed). They have taken great care in the selection of the resin, the quality of which varies, and the preparation as now sent us is not only tasteless but elegant. They also send us some capsules containing: guaiacum, 3 grains: guaiacate of lithia, 2 grains; the value of which in chronic gout and rheumatism is self-evident. We believe that both preparations will be appreciated by the profession.

Hydriodic Acid (Syrup of).—This enables hydrogen iodide to be administered in a permanent form, and has proved a very efficient method of administering this drug. Messrs. Thos. Christy & Co., of 25, Lime Street, E.C., are the agents.

Ichthyol.—The value of ichthyol as an *internal* medicament is becoming more extensively recognised, and several new preparations have been introduced.

Ichthalbin.—This is practically ichthyol in the form of an impalpable powder. It is recommended for internal use when a prolonged local action is required, such as in dysentery and typhoid fever. It is slowly soluble in an alkaline medium such as the intestinal secretion, and is recommended to be given in doses of $\frac{1}{3}$ to $\frac{1}{2}$ a teaspoonful three or four times a day. This dose appears to us to be larger than is necessary, as only a portion of it would undergo solution. The ichthyol capsule which Professor Unna recommends for digestive disorders only contains $3\frac{3}{4}$ grains of ichthyol, and in this dose they produce a decided effect.

Other preparations for the internal administration of ichthyol prepared by the Ichthyol Company are: *Ichthyol-calcium* tablets, which have some repute as a diuretic in Germany; *Ichthyol-sodium* is also given in the form of a pill (gr. $1\frac{1}{2}$) in digestive disorders. More recently a combination of ichthyol and iron, under the name of *Ferrichthyol*, has been employed in the treatment of anæmia and chlorosis, 4 to 12 tablets being given during the day. The preparation has a marked effect on the digestive difficulties met with in most cases.

These preparations are all excellently prepared by the Ichthyol

Company, who have an agency in London under the direction of Mr. Gustav Hermanni, jun., at 20, High Holborn, W.C.

Iodalbacid.—Iodalbacid is a preparation of albumen and iodine, easily soluble in water, free from any unpleasant smell or taste. It contains iodine only in intramolecular combination with albumen. In the system iodalbacid is decomposed, whereby iodine is set free without producing any undesirable secondary symptoms. Iodalbacid may be used in all cases where a constant iodine treatment and the chronic action of iodine are wanted. Messrs. Thos. Christy & Co, 25, Lime Street, London, E.C., are the British agents.

Isphagul.—The seeds of Plantago Isphagul have been recommended as a remedy for diarrhœa and dysentery. Major L. T. Young, M.D., mentions its use in his work, "Carlsbad Treatment for Tropical Ailments." It is invaluable in dysentery, taken as a weak gelatinous infusion. Major Young considers it will prove most useful in South Africa and Australia, its uses in India being already recognised.

A supply of this drug has been obtained by Messrs. C. J. Hewlett & Son, 40-42, Charlotte Street, London E.C., and deserves a trial.

Menthymoline (Hewlett).—This is an antiseptic solution containing boric acid, thymol, menthol, oil of wintergreen, oil of eucalyptus, etc., which has been found useful as a lotion or gargle for internal and external use. It has an agreeable flavour, and the powerful antiseptic properties render it suitable as a gargle for inflammation of the throat and mouth, leukoplakia, etc., when diluted with three or four parts of water. It is non-poisonous and perfectly harmless. A preparation such as this is constantly needed in every-day practice, and we can recommend it. It is made by Messrs. C. J. Hewlett & Son, 40-42, Charlotte Street, London, E.C.

Methylene Blue.—This is a difficult substance to dispense, and we are glad to find that Messrs. A. H. Cox & Co., of Brighton, have added it to their list of sugar-coated pills. There seems to be much in favour of using this drug in rheumatoid arthritis.

Nepenthe Suppositories.—We have for many years used nepenthe to the exclusion of all other opium preparations for the relief of pain. Our experience is that in malignant disease attended by acute pain, the regular use of nepenthe in 5-drop doses, at intervals of two or three hours, not only relieves pain, but acts as a sustaining agent to the patient. We have never seen the slightest ill-effects from its use, such as accompany the injection of morphia. We find that small frequent doses are more efficient than large doses at longer intervals. Messrs. Ferris & Co., of Bristol, have recently introduced some nepenthe suppositories for use in cases of rectal pain, and they are much more satisfactory than suppositories of morphia of equivalent strength. They are made in three strengths, representing $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ grain of morphia respectively.

Nuclein.—This substance has attracted considerable attention during recent years, and some account of its nature and preparation will be of interest. Nuclein is an essential chemical constituent found

in the nuclei of all living cells, and generally contains carbon, nitrogen, oxygen, hydrogen, sulphur and phosphorus, and sometimes iron. The considerable quantity of phosphorus which it contains, amounting to 5 or 6 per cent., points to its distinguishing characteristic, and thereby differentiates nuclein from ordinary proteids.

Nucleinic acid is an organic substance constituting the chief ingredient of nuclein. It is a powerful germicide, and it increases the number of leucocytes. Both these properties are now generally admitted. Dr. Hahn, of the Hygienic Institute of the University of Munich, says the effect of its administration is to double the germicidal power of the arterial blood, and in a short time to double the number of leucocytes therein. Von Mayer, of Prague, goes even further and reports an average increase of the latter to the extent of over 75 per cent.

It strengthens the disease-resisting powers of the body; has been proved to be useful in debilitated conditions of the system generally; in infectious diseases and their adynamic sequelæ, in cancer, pneumonia, and septicæmia; and in the multitudinous forms of tubercular affections, as scrofula, lupus, abscess, adenitis, ulcers, and phthisis.

N.B.—In some patients there may appear, after a time, uric acid or gouty pains, when alkaline diuretics should be given; and if necessary the dose of nuclein must be diminished, or even suspended temporarily. Moreover, quinine and most of the antipyretics are physiologically incompatible with nuclein, and should not be administered while the patient is undergoing that treatment.

Messrs. Parke, Davis & Co., 21, North Audley Street, London, W., supply *yeast* nuclein in four forms viz. :—

No. 1, *Nuclein Solution.*—This contains 5 per cent. of nucleinic acid, and is intended for *hypodermic* administration only. It is sold in 1 fluid ounce bottles at 2s. 6d. each.

No. 2, *Nuclein Solution.*—This contoins 5 per cent. of nucleinic acid for *oral* administration only. It is supplied in bottles of 4 ounces at 2s. 6d.

No. 3, *Nuclein Capsules.*—Each capsule contains 2 grains of nucleinic acid, for *internal* use only. One or two may be taken thrice daily between meals and at bedtime. They are sold in bottles of 100 at 7s. 8d.

No. 4, *Mercurol.*—This is a true chemical compound of nuclein with mercury. It yields brilliant results in gonorrhœa, cystitis, ophthalmia neonatorum, ulcer of the cornea, otitis media, etc.

Mercurol is the latest addition to that family of remedial agents which now occupy such an important position in the materia medica—the germicides. Chemically, mercurol is a true compound of yeast nuclein with mercury; it is soluble in water—particularly in warm water—yielding solutions having a neutral or faintly alkaline reaction.

It is applied *locally* in a 1 per cent. solution, which acts most happily when freshly prepared. It does not coagulate albumen; it is not caustic or corrosive; it destroys bacteria, especially pyogenic bacteria, thus controlling suppurative processes; it exerts a selective

antagonistic action upon the gonococcus; it is not precipitated by alkalies. From the nature of its composition and the *rationale* of its action, we predict for this new germicide a brilliant record in the contest with pyogenic organisms. Its price is 7s. 6d. per oz.

Oleum Morrhuæ Comp. (Wampole).—This name would indicate a mixture of Cod-liver Oil with other ingredients, but it is not, and the manufacturers are careful to point out on all their circulars and bottles that it is an *extract* from cod-liver oil combined with extract of malt, syrup of hypophosphites, etc. The manufacturers do not attempt to separate the individual organic substances found in cod-liver oil, but they extract the whole and eliminate the oily matter only. They contend that the superiority of cod-liver oil, over all others, is due to the presence of these extractive matters, and that other forms of fat, more easily assimulated, can better take the place of the oil minus the peculiar principle which it contains. The general effect of these extractive matters appears to be to increase tissue metabolism, act as a diuretic, and increase the appetite. The value can only be proved by clinical experiment, and the prolonged use of this remedy in America shows better results than those obtained with cod-liver oil. For this reason it is being introduced in this country, and has met with a very favourable reception owing to the excellent effects obtained. We have carefully considered the matter and examined the mode of manufacture, and we think practitioners would be well advised to give it a careful trial. Messrs. Evans, Lescher & Webb, 60, Bartholomew Close, E.C., are the wholesale agents.

Oxydol.—Under this name a preparation of hydric peroxide has been introduced which, after careful testing, proves to be of exceptional stability and purity. It is being given, both internally and externally, with very marked results in cases where oxygen is indicated. Thus it has given very good results as an internal antiseptic and deodoriser, and acts under such circumstances as an antifermentative. Locally, it has been used for cases of ulcers and eczema.

One case is recorded of a diabetic patient who was given tablespoonful doses of oxydol, mixed with water, three times a day, with the result that the sugar quite disappeared; and a gangrenous ulcer to which oxydol was applied completely healed. It has also been used with excellent effects as a gargle for various inflammations of the throat, including those with actual ulceration or diphtheritic patches.

It is a remedy destined to play an active part in the therapeutics of the future, and we are glad that its manufacture has been taken in hand by a company under the style of Oxydol, Limited, 56, Berners Street, London, W.

Pichi (Fabiana imbricata).—This is one of the newer remedies for catarrh and irritability of the bladder which has been used with considerable satisfaction in America. It seems to act more favourably when the irritation is due to gravel, or there exists other mechanical cause of irritation. It has some diuretic properties, but is contra-indicated in organic kidney disease. Messrs. Parke, Davis & Co., 21, North Audley Street, London, W., supply a fluid extract of pichi,

which is a very reliable preparation, and one which might be employed with advantage in many of the cases of bladder difficulty met with in every-day practice.

Red Bone Marrow.—The use of this substance in many cases of exhausting and wasting disorders has induced Messrs. Cox & Co., of Brighton, to put it up in the form of pills, which are sugar-coated.

Salve Mulls are ointments manufactured on a large scale, which are of a hard consistence, spread on elastic muslin, and capable of being folded and cut *ad libitum*. They are practical and convenient. We believe that our readers interested in skin diseases would do well to communicate with Messrs. Beiersdorf & Co., of Hamburg, whose preparations enable the treatment of Prof. Unna to be carried out with great success. The agent for Great Britain is Hugo Lorenz, 7 & 8, Idol Lane, E.C.

"Soloid" Brand Indicators for Chemical Testing.—The issue, by Messrs. Burroughs, Wellcome & Co., of Snow Hill Buildings, London, E.C., of "Soloid" preparations for water analysis and for preparing stains for microscopy has been followed by a further interesting development. The frequent need for some substance capable of indicating the end of a chemical reaction, such as the exact point of neutralisation of an acid or an alkali, has led to the introduction of a series of useful "Soloid" Indicators.

By this means small amounts of a solution of any indicator, of the proper quality and strength, may be quickly prepared as required, and the need of keeping bulky and unstable solutions is avoided. The list already includes "Soloid" indigo-carmine, lacmoid, methyl-orange, phenolphthalein, rosolic acid, and starch.

Sugar (Pure).—We have received a sample of sugar from the Glebe Sugar Refining Company, St. George's House, Eastcheap, London. This appears as "granulated," "cubes," and "castor," also in the form of "syrup"; but the most important point is that it is all pure *cane* sugar, and is free from beetroot or chemicals.

It is of great importance, considering how largely it enters into the composition of many pharmaceutical preparations, that we shall be able to obtain a sugar that can be relied upon as genuine.

Sulphaqua.—This method for extemporising baths containing the nascent sulphur, useful in some skin affections, was noticed in our last issue. One of the facts which has struck us in further use is the remarkable power of the water charged with sulphaqua to cleanse and bleach the sponges used in the bath; in fact, it is worth while to have some of the powders if only for this purpose of keeping sponges clean and wholesome. We find that the use of sulphaqua in baths does not blacken the enamel of the bath, and the results clinically have been most satisfactory. The sulphaqua powders can be obtained of the Seltzogene Patent Charges Co., 73, Hamer St., St. Helens, Lancashire.

Syrup. Ferri Phos. Co. (Yellow).—Practitioners who dispense medicines for their patients find that "Parrish's Food" is at once detected by its colour. Messrs R. Sumner & Co. have rendered it possible to take the wind out of the sails of the knowing ones by altering its

colour to yellow. To those who want a change of medicine, because they do not realise the necessity of persisting with one of which a long course is required, can have it, so far as the eye enables them to judge. The cost of this "new" remedy is 8d. per lb.

Syrup. Glycerophosphatis.—This has lately been used extensively for neurasthenia and the after-effects of influenza, and with very good results. Messrs. Sumner & Co., of Liverpool, produce a very reliable preparation at 4/- per lb.

Tanocol.—This is allied to tannalbin, which we described in our last issue. It contains about equal parts of tannin and gelatin in saline combination, possesses the property of being very slightly affected by acid liquids, such as the gastric juice, while it is slowly dissolved in alkaline fluids, such as the intestinal juice, by splitting up the tannin. The preparation, therefore, seems indicated as an intestinal astringent, being insoluble in the stomach—like tannalbin (tannin-albuminate). It supersedes the latter owing to its being less expensive (25 to 30 per cent.). It has given good results in acute and chronic enteritis, and in the intestinal disorders of children. It has no smell or taste, and appears to be taken without difficulty by the most delicate patients. Messrs. A. & M. Zimmermann, St. Mary-at-Hill, London, E C., are the agents for Great Britain.

Terebene Palatinoids.—These are a new, elegant and convenient method of prescribing terebene, whether it is used for winter cough, or bronchitis, or as an anti-fermentative in gastric disorders, or for catarrh of the bladder. The palatinoids are also handy for making a terebene inhalation. All that is necessary to do is to drop one into boiling water. Messrs. Oppenheimer, of 179, Queen Victoria Street, London, E.C., are the manufacturers.

Thealin is a name given to salt of lithia, which has been used in a large number of cases with great success for the relief of pain in gout and rheumatism. It renders the urine alkaline, and causes diuresis and catharsis. Messrs. Thomas Christy and Co., of 25 Lime Street, London, E.C., are the agents.

Thyrocol Palatinoids.—This is the colloid matter of the sheep's thyroid, and has been used with great success in the treatment of myxœdema. It has also been used in some cases of obesity with excellent results. The palatinoid is an excellent form for its administration, and the thyrocol sent out by Messrs. Oppenheimer has been proved clinically to be a very effective remedy.

DIETETIC ARTICLES.

Malvern Water.—There is a softness and brightness about the water of St. Anne's Well at Malvern that is not equalled by any of the wells abroad from which table waters are bottled. Its natural temperature is 47° F., and it never seems to lose its cool, refreshing character, even when bottled and conveyed a long distance. As a table-water it is best taken in its natural state, and not aërated. It is then cheaper than any other table-water, as it is sent out in quart bottles at a small price.

It blends well with wine and spirits, and improves their taste. It can also be had aërated under the name of "Sparkling Malvern," and also with the addition of lithia under the name of "Lithiated Malvernia." It can be obtained from Burrows' Seltzer Water works, Malvern, and it is desirable to specify the name of the bottler.

Manhu Foods.—These foods are specially prepared under a new process, by which not only the husk is removed, but the more indigestible portions of the cereals are changed, and the food partly cooked and rendered easier of digestion, more palatable, and more nourishing. They contain all the natural mineral salts found in the grain, which are so valuable for building up strong bone, muscle, brain and nerve tissues. The principle of manufacture has been adapted to many varieties of cereals, such as oats, flaked wheat, barley, rice, hominy, buckwheat, etc. They are well adapted to the needs of invalids, and give a pleasant variety in the diet; and as they are all digestible can be recommended with great confidence.

The manhu foods also include diabetic flour and biscuits, which differ from those in ordinary use in the fact that in their manufacture the carbo-hydrates are changed, but none are eliminated. The change is slight, but effective. There is no sugar in them except some 2 per cent. of maltose which has a different molecular constitution from glucose.

These foods are palatable, and may be used in many cases when it is desirable to eliminate the starchy element in diet, *i.e.*, in gout and rheumatism. We believe that all these foods will be found valuable, and will be of great assistance to the practitioner in dieting patients. Messrs. Wright, Crossley & Co., 17, North John Street, Liverpool.

Oatmeal.—Messrs King & Co., Sycamore St., London, E.C., send us a sample of their well known cooked oatmeal, which is a food well adapted for all purposes where an easily digested food of great stimulating power is required.

Shredded Wheat.—By a very ingenious mechanical process whole wheat, without any addition or subtraction, is produced in the form of fine shreds, and cooked into biscuits. There is no question of its purity and wholesomeness as a food, and the absence of the fermenting process necessary in the manufacture of bread renders it better adapted for cases of indigestion. It also has a good effect on those who suffer from constipation. It is distinctly a novelty, and one which, we think, will find an extensive use in treatment. We should advise our readers to obtain a sample and try it for themselves. A little book, published by the inventors, contains some hundreds of receipts for using shredded wheat, and is well worth possessing. London Office: Shredded Wheat Co., 6 and 8, Eastcheap, E.C.

Viking Condensed Milk.—This milk is produced by the firm of Henri Nestlé, of 48, Cannon Street, London, E.C. It is simply a pure milk condensed and sterilised. It contains no sugar, nor is any chemical agent used for its preservation. A tin, after it is opened, will not keep for much longer than ordinary fresh milk, but unopened it will keep for an indefinite time.

Books of the Year.

A List of the Principal Medical Works and New Editions Published during 1899.

AMBULANCE AND NURSING.

Ambulance: Manual of. By J. Scott Riddell. With 170 Illustrations and Full-page Plates. 4th ed. Cr. 8vo, pp. 230. *Griffin* - 4/-

Ambulance Lectures. First Aid to the Injured. By Sam. Osborn. 4th ed. With Illustrations. 12mo, pp. 164. *Lewis* - - - 2/-

Care of the Sick at Home and in the Hospital: A Handbook for Families and for Nurses. By Dr. Th. Billroth. Translated by J. Bentall Endean. With Portrait and 52 Illustrations. 6th ed., revised and enlarged. Cr. 8vo, pp. 334. *Simpkin* - - - - 2/6

First Aid: Manual of. Being a Text-book for Ambulance Classes and a Work of Reference for Domestic and General Use. By. J. A. Austin. Illustrated. Cr. 8vo, pp. xi-203. *Low* - - - - - 3/6

First Aid Work and Home Nursing for the Use of Ambulance Classes: Text-Book of. Edited by William R. Smith. Cr. 8vo, pp. 160. *Allman* *Net* 2/-

From a Nurse's Note Book. By Honnor Morten. Cr. 8vo, pp. 154. *Scientific Press* - - - - - - - - - - - 5/-

Nurses: A Handbook for. By J. K. Watson. Cr. 8vo, pp. 426. *Scientific Press* - - - - - - - - - - - 5/-

Nursing: General. By Eva C. E. Luckes. Cr. 8vo, pp. 366. *Paul, Trübner & Co.* - - - - - - - - - - 5/-

Nursing: Its Theory and Practice. Being a complete Text-Book of Medical, Surgical, and Monthly Nursing. By Percy G. Lewis. 13th Thousand. Enlarged and revised throughout. Cr. 8vo, pp. 448. *Scientific Press* - - - - - - - - - - - 3/6

Nursing: Practical. By Isla Stewart and Herbert E. Cuff. In Two Volumes. Vol. I. Cr. 8vo, pp. 256. *W. Blackwood* - - *Net* 3/6

Nursing Profession, The: How and Where to Train. Being a Guide to Training, with Particulars of Training Schools in the United Kingdom and Abroad, and an Outline of the Principal Laws affecting Nurses, etc. Edited by Sir Henry Burdett, K.C.B. Cr. 8vo, pp. 274. *Scientific Press* *Net* 2/-

Private Nurse, The: Some Reminiscences of Eight Years' Private Nursing. By Jessie Holmes. Cr. 8vo, pp. 120. *Unwin* - - 3/6

Surgery for Nurses: Notes on. By Joseph Bell. 5th ed., thoroughly revised. Cr. 8vo, pp. 194. *Oliver & Boyd* - - - - 2/6

Surgical Ward Work and Nursing: A Handbook for Nurses and others. By Alexander Miles. With 333 Illustrations. 2nd ed. 8vo, pp. 294. *Scientific Press* - - - - - - - - - - *Net* 3/6

ANATOMY AND PHYSIOLOGY.

Anatomical Diagrams. For the Use of Students. Arranged with Analytical Notes and Drawn Out. By James M. Dunlop. With Introductory Preface by John Cleland, M.D., F.L.S. Roy. 8vo, pp. 80. *Bell* - - - - - - - - - - - - - - *Net* 6/-

Anatomy: Handbook of. For Art Students. By Arthur Thomson. Illustrated. 2nd ed. 8vo, pp. 434. (*H. Frowde*) *Clarendon Press* *Net* 16/-

Anatomy: Text-Book of. By Frederick Henry Gerrish. 950 Engravings in Black and Colours. Roy. 8vo, pp. 918. *Kimpton* - - *Net* 27/-

Anatomy, Human: Text-Book of. For the Use of Students. Specially Prepared to Accompany the Set of Anatomical Diagrams by Drs. Fiedler and Hoelemann. Translated by Owen Lankester. With 54 Illustrations and 4 Full-page Plates printed in Colours. Roy. 8vo, sd., pp. 84. *Allman* - - - - - - - - - - - - *Net* 2/-

Anatomy, Human: Treatise on. By various Authors. Edited by Henry Morris. 2nd ed. Revised and enlarged. Illustrated by 790 Woodcuts, many of them in several Colours. Roy. 8vo, pp. 1,304. *Churchill* 36/-

Anatomy of the Brain and Spinal Cord. By J. Ryland Whitaker. 6th Thousand. Cr. 8vo, pp. 224. *Livingstone* - - - - *Net* 5/-

Anatomy of Labour: As Studied in Frozen Sections, and its Bearing on Clinical Work. By A. H. F. Barbour. 2nd ed. Cr. 8vo, pp. 388. *Johnston* - - - - - - - - - - - - - 6/-

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Human Osteology, Holden's. Comprising a Description of the Bones, with Delineations of the Attachments of the Muscles, the General and Microscopic Structure of Bone and its Development. Edited by Charles Stewart and R. W. Reid. 8th ed. Roy. 8vo, pp. 368. *Churchill* 16/-

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Isle of Wight.—*The County Asylum,* Carisbrooke. Res. Med. Supt., Harold Shaw, M.B. Access—Blackwater station, ¾ mile.

See also p. 811.

Isleworth (Middlesex). — *Wyke House.* Res. Prop., Dr. F. Murchison. Access—Isleworth, Brentford, Osterley station, 1 mile.

Ivybridge (Blackadon). — *Plymouth Borough Asylum.* Res. Med. Supt., W. H. Bowes, M.D. Access—Wrangaton, G.W.R., 1½ miles; Ivybridge, 3 miles.

Jersey. — *The Grove.* Res. Med. Prop., F. N. Gaudin, M.R.C.S. 2½ miles from St. Heliers, 2 from St. Aubin's. Access—G. W. R. *viâ.* Weymouth

Jersey Asylum. Med. Supt., Julius Labey, M.R.C.S., &c.

Kilkenny.—*District Asylum.* Res. Med. Sup., G. F. West, L.R.C.P. Access—Kilkenny, ½ mile.

Killarney.—*District Asylum.* Res. Med. Supt., Dr. L. T. Griffin. Asst. Med. Off.., E. W. Griffin, M.D. Access—Killarney, ½ mile.

Kirkby Lonsdale. — *Greta Bank.* Res. Licensee, Miss Williams. Access—Bentham (M.R.) 2 miles.

Knowle (near Fareham).—*County Asylum.* Med. Supt., T. B. Worthington, M.D.

Lancaster.—*County Asylum.* Res. Med. Supt., David M. Cassidy, M.D., D.Sc. Access—Lancaster station (Mid. and L. & N.W. Rly.)

Leeds (Menston, near). — *West Riding Asylum.* Res. Med. Supt., Dr. McDowall. Access—Menston, 1 mile.

Leicester. — *Borough Asylum.* Res. Med. Supt., J. E. M. Finch, M.D. Access—Leicester.

Leicestershire and Rutland Asylum. Res. Med. Supt., R. C. Stewart, M.R.C.S. Access—Leicester Town, 1 mile.

Letterkenny and Londonderry.—*Donegal District Asylum.* Res. Med. Supt., E. E. Moore, M.D. Asst. Med. Off., J. C. Martin, L.R.C.S.I. Access—Letterkenny and Lough Swilley Rly. ½ mile.

Lichfield.—*County Lunatic Asylum,* Burntwood, near Lichfield. Res. Med. Supt., J. B. Spence, M.D. Access—Lichfield City, 3½ miles; Trent Valley, 4½ miles; Hammerwich, 1½ mile.

Limerick.—*District Asylum.* Res. Med. Supt., Dr. E. D. O'Neill. Access—Limerick station, ½ mile.

Lincoln.—*County Asylum,* Bracebridge. Med. Supt., Dr. G. Parsons Torney. Access—2½ miles from station.

The Lawn. Res. Med. Supt., Arthur P. Russell, M.B. Access—Lincoln, 1 mile. *See also p.* 807.

Liverpool. — *Shaftesbury House.* Near Liverpool and Southport. Res. Med. Supt., Stanley A. Gill, B.A., M.D., M.R.C.P., Lond. Access—Formby station, ¼ mile distant. *See also p.* 803.

Tue Brook Villa, 3 miles from Liverpool. Res. Med. Supt., Geo. Duffus, M.B. (For 52 males and females). Access — Tue Brook station.

London.—*Bethlem Royal Hospital*, St. George's Road, London, S.E. Res. Med. Supt., Theo. B. Hyslop, M.D., M.R.C.P.E.

See also p. 805.

Bethnall House, Cambridge Rd., N.E. Res. Med. Supt., J. K. Will, M.D. Lieut. Philip Vyner, Secretary. Access—Station near East London Museum.

Brooke House, Upper Clapton. Props., Mr. H. T. Monro and Dr. J. O. Adams. Res. Med. Supt., Dr. J. O. Adams. Access — Clapton.

Camberwell House, S.E. Res. Med. Supt., Flavius H. Edwards, M.D., M.R.C.P. Asst. Med. Offs., Norman Lavars, M.D., and Robt. Serjeant, M.R.C.S.

See also p. 810.

Chiswick House, Chiswick, and 30, Queen Anne St., W. Res Lics., T. S. Tuke, M.A., M.B., M.R.C.S., and C. M. Tuke, M.R.C.S. Access—Chiswick sta., ¾ mile; Turnham Green station, ⅓ mile.

County Asylum, Colney Hatch, N. Res. Med. Supt. W. J. Seward, M.B. Access — New Southgate, G.N.R.

Featherstone Hall, Southall. Med. Lic., Miss H. E. Dixon. Res. Med. Supts., Drs. G. F. Blandford and G. B. McDonald. Access—Southall sta., 5 minutes.

Fenstanton, Christchurch Road, Streatham Hill. Res. Med. Supt., Dr. J. R. Hill. Access—Tulse Hill and Herne Hill, 15 minutes.

See also p. 807.

Flower House, Catford, S.E. Res. Med. Supt., C. A. Mercier, M.B. Access — C. and D. R. Beckenham Hill, 5 minutes.

Grove Hall, Bow (both sexes), Med. Lics., Mr. Byas and Dr. Mickle. Access—Bow Road and Bow stations, ⅛ mile.

Halliford House, Sunbury-on-Thames, S.W. Res. Med. Supt., W. J. H. Haslett, M.R.C.S., Access—Sunbury station, 1¼ mile.

Hayes. Wood End House (ladies). Uxbridge, 3 miles, London 12 miles. Med. Lic., Dr. H. Stilwell. Access—Hayes station, 1 mile.

Hayes Park, Hayes, Middlesex, near Uxbridge. Prop., Mrs. B. Kelday. Access—Hayes, 2 miles.

Hendon Grove Asylum (for ladies), Hendon. Med. Lic., F. W. Eldridge Green, M.D., F.R.C.S. Access—By M.R., Hendon stat., ½ mile, or 'Bus from Swiss cottage, St. John's Wood, N.W.

Hoxton House, London, N. Res. Med. Supt., J. F. Woods. Access — Shoreditch station, 2 minutes; Liverpool Street station, 10 minutes.

London County Asylum, Banstead, S.E., near Sutton. Res. Med. Supt., T. C Shaw, M.D. Access — Belmont sta., ½ mile; Sutton station, 1½ mile.

London County Asylum, Cane Hill, Purley, Surrey. Res. Med. Supt., Dr. J. M. Moody. Access — Coulsdon (S.E.R.), or Stoat's Nest (L.B. & S.C.R.), 10 minutes.

London County Asylum, Claybury, Woodford, Essex. Res. Med. Supt., Robt. Jones, M.D. Access—Woodford, 1½ miles

London County Asylum, Hanwell, W. Res. Med. Supt., R. R. Alexander, M.D.

Middlesex County Asylum, Tooting, S. W. Med. Supt., H. G. Hill, M.R.C.S. Access—Wandsworth Common station, 1 mile.

Moorcroft House, Hillingdon (males). Uxbridge, 2 miles, London, 13 miles. Med. Licensees, Dr. Stilwell, and Dr. R. H. Cole. Access—West Drayton, 2 miles.

Newlands House, Tooting, Bec Road, S.W. Med. Prop., Dr. H. Sutherland. Access — Balham station, 1½ miles, and tram.

Northumberland House, Green Lanes, N. Prop., A. H. Stocker, M.D. Res. Med. Supt., Dr, C. Bayley. Access—Finsbury Park station, 1 mile.

Otto House, 47, North End Rd., Hammersmith, W. Med. Prop., Dr. H. Sutherland. Access—West Kensington station, 1 mile.

Peckham House, Peckham, S.E. Prop., Alonzo H. Stocker, M.D. Res. Med. Supt., Harold C. Halsted, M.D. Access—Peckham Rye station, 10 minutes' walk. *See also p.* 811.

St. Luke's Hospital, Old St., E.C. Res. Med. Supt., Wm. Rawes, M.D., F.R.C.S. *See also p.* 805.

The Huguenots, East Hill, Wandsworth, S.W. (ladies), Lic., Mrs. Leech. Med. Off., Dr. G. F. Blandford. Access — Clapham Junc. sta., 10 mins.; Wandsworth, 3 minutes.

The Priory, Roehampton, S.W., near Richmond. Res. Med. Supt., James Chambers, M.D. Access — Barnes station, 8 minutes.

Vine Cottage, Norwood Green, Middlesex. Prop., Mrs. Oliver. Med. Supt., Dr. Windle. Access — Southall station, 1 mile.

Londonderry. — *District Asylum.* Res. Med. Supt., Dr. Hetherington. Access—Londonderry, 1 mile.

Macclesfield. — *Parkside Asylum.* Res. Med. Supt., T. Steele Sheldon, M.B., Lond. Access — Macclesfield station, 1 mile.

Maidstone —*Kent County Asylum.* Res. Med. Supt., F. P. Davies, M.D. Access — Maidstone sta., 1½ miles.

West Malling Place (for ladies). Castle House and Winthies Cottage (for gentlemen). Res. Med. Supt., Dr. James Adam. Access—Malling station, 1 mile.

Market Lavington (Wilts). — *Fiddington House.* Prop., Major Reilly. Access—Devizes, 6 miles.

Maryborough (Queen's County). — *District Asylum* Res. Med. Supt., Dr. J. H. Hatchell. Access—Maryborough, ½ mile.

Melrose, N.B.—*Roxburgh District Asylum.* Res. Med. Supt., J. C. Johnstone, M.D. Access—Melrose, 1 mile,

Melton. *Suffolk County Asylum*, near Woodbridge. Res. Med. Supt., J. R. Whitwell, M.B. Access—Melton station, 1¼ mile; Woodbridge station, 2¼ miles.

Monaghan (Ireland). — *District Asylum.* Res. Med. Supt., Dr. Edward Taylor. Access Monaghan, ¼ mile.

Montrose, N.B.—*Montrose Royal Lunatic Asylum.* Phys. Supt., John G. Havelock, M.D. Access — Hillside station, ¼ mile; Dubton station, 1 mile.

Morpeth. — *Northumberland County Asylum.* Res. Med. Supt., Thos. W. McDowall, M.D. Access - Morpeth station, 1 mile, by 'Bus.

Mullingar.— *District Asylum.* Res. Med. Supt., Dr. A. D. Finegan. Access—Mullingar sta., 1 mile.

Nelson (Lanc.). — *Marsden Hall* (both sexes). Res. Prop., Mrs. Bennett. Med. Supt., Dr. A. P. Millar. Access - Nelson or Colne sta., 1½ miles. *See also p.* 810.

Newcastle-on-Tyne. — *City County Asylum*, Gosforth. Res. Med. Supt., Jas. T. Callcott, M.D. Access—Newcastle, 4 miles.

Newton-le-Willows (Lanc.) — *Haydock Lodge Asylum.* Med. Prop., E. H. Beaman, M.R.C.S., Edin. Res. Med. Supt., Dr. C. T. Street. Access—Newton-le-Willows station, 2 miles.

See also p. 806.

Northampton.—*Berrywood Asylum.* Res. Med. Supt., W. Harding, M.D. Access — Castle station, 2 miles; Midland stat., 2½ miles.

St. Andrew's Hospital. Med. Sup., J. Bayley, M.R.C.S. Access—Northampton station, 1 ml.

Norwich.—*Heigham Hall.* Lics., Mrs. Watson and Mr. A. Mottram. Res. Med. Supt., Dr. A. McWilliam. Access—Victoria station, 1 mile; Thorpe sta., 1½ miles.

See also p. 812.

Norfolk County Asylum, Thorpe. 850 beds. Res. Med. Supt., D. G. Thomson, M.D. Access — Whitlingham station, 1 mile.

Norwich City Asylum, Hellesdon, near Norwich. Res. Phys and Supt., Wm. Harris, M.D. Hon. Con. Phys., Sir F. Bateman, M.D. Res. Asst. Med. Off., Dr. A. Sykes. Access—Thorpe, cab 4/-; Victoria station, cab, 3/6; City station, 3/-; Hellesdon sta., 1 mile.

The Bethel Hospital for the Insane. Res. Med. Supt., J. Fielding, M.D. Con. Phys., Sir F. Bateman, M.D. Access—Thorpe sta., 1 mile.

Nottingham.—*City Asylum*, Mapperley Hill. Med. Supt, E. Powell, M.R.C.S.

Notts County Asylum, Sneinton. Res. Med. Supt., Dr. A. Aplin. Access—M., G.N. or G.C. stations, 15 minutes.

The Coppice. Res. Med. Supt., W. B. Tate, M.D. Access—Mid. and Great Northern station, 2½ miles

Omagh. — *District Asylum.* Res. Med. Supt., Geo., E. Carre, M.B. Access—Omagh. 2 miles.

Oxford. — *Oxford County Asylum.* Res. Med. Supt., R. H. H. Sankey, M.R.C.S. Access—Littlemore station, G.W.R.

Warneford Asylum, Oxford, 1½ miles (for private patients only), Res. Med. Supt., James Neil, M.D. Access—Oxford station, 2¼ miles. *See also p.* 809.

Paisley.—*Parochial East Asylum.* Med. Supt., T. Graham, M.D. Access—Paisley, 1 mile.

Parochial Asylum, Riccartsbar. Med. Off., D. Fraser, M.D. Access—Paisley West, ¼ mile.

Perth.—*District Asylum*, Murthly. Res. Med. Supt., Lewis C. Bruce, M.D. Access—Murthly.

James Murray's Royal Asylum (for private patients only), Perth. Access—Perth, under 2 miles.

Plymouth. — *Plympton House*, Plympton, South Devon. Lrs. Aldridge and Turner. Access—Plympton, 1 mile; Mills, 2 miles. *See also p.* 806.

Portsmouth. — *Borough Asylum.* Res. Med. Supt., B. H. Mumby, M.D., D.P.H. Access—Fratton station, 1½ miles.

Prestwich (near Manchester).—*County Asylum.* Res. Med. Supt., Henry Rooke Ley, M.R.C.S.

Rainhill (nr. Liverpool).—*County Asylum.* Res. Med. Supt., J. Wiglesworth, M.D. Access—St. Helen's, 2½ miles; Rainhill, 1 mile.

Rotherham (Yorkshire). *The Grange*, near Rotherham, 5 miles from Sheffield (for ladies). Res. Med. Prop., W. C. Clapham, M.D. Access — Grange Lane station, ¼ mile.

Salisbury.—*Fisherton House Asylum* Med. Supt., W. C. Finch, M.D. Acc.—Salisbury Stat., 5 minutes.

Laverstock House. Prop., J. Haynes; Med. Supt., Hy. J. Manning, M.R.C.S.

Shrewsbury.—*Salop & Montgomery Counties Asylum.* Res. Med. Supt., A. Strange, M.D. Access—Shrewsbury station, 2½ miles.

Sligo.—*District Asylum.* Res. Med. Supt., Dr. Joseph Petit. Access—M., G.W. and Sligo, Leitrim and N. Counties Rly., Sligo sta., 1½ miles.

Stafford. — *County Asylum.* Res. Med. Supt., Dr. J. W. S. Christie. Access—Stafford, 1 mile.

Institution for the Insane, Coton Hill. Res. Med. Supt., Dr. R. W. Hewson. Acc.—Stafford, 1 mile.

Starcross (near Exeter).—*Western Counties Idiot Asylum.* Res. Supt., E. W. Locke. Access—Starcross station, 5 minutes.

Stirling.—*District Asylum.* Med. Supt., Dr. George M. Robertson. Access—Larbert, 1½ miles.

St. Leonards-on-Sea. — *Ashbrook Hall*, Hollington (for ladies). Res. Props., Mrs. Hitch and Miss Adams. Access—Warrior Square Station, 2 miles.

Stone (near Aylesbury).—*Bucks County Asylum.* Res. Med. Supt., J. Humphry, M.R.C.S. Access—Aylesbury station, 3¼ miles.

Sutton (Surrey).—*Chalk Pit House* (for 3 lady patients). Prop., F. D. Atkins, M.R.C.S.

Tamworth (Staffs.). — *The Moat House* (for ladies). Res. Prop., E. Hollins, M.A. Med. Attnds. J. Holmes Joy, M.D., and C. H. Joy, M.D. Access—Tamworth, ¾ mile. *See also p.* 807.

Taunton.—*Somerset & Bath Asylum*, Cotford, near Taunton. Res. Med. Supt., Mr. H. T. S. Aveline. Access—Norton Fitzwarren stat., 2 miles.

Ticehurst (Sussex). — *Asylum*. Props., H. F. H. Newington, M.R.C.P., and A. S. L. Newington, M.B.

Tonbridge.—*Redlands*. Res. Med. Supt., W. A. Harmer. Access—Tonbridge junction, S.E.R., 2½ miles.

Virginia Water.—*Holloway Sanatorium*, Hospital for the Insane. St. Ann's Heath. Res. Med. Supt., W. D. Moore, M.D. Asst. Med. Officers, Dr. W. Tinker, T. E. Harper, L.R.C.P., Rosina C. Despard, M.D., and N. E. Thomas, L.R.C.P. Access — Virginia Water sta., 5 minutes. Seaside Branch, Hove Villa, Dyke Rd., Brighton. Med. Officer, E. N. Edwards, M.R.C.S.

See also p. 812.

Wadsley (near Sheffield).—*South Yorkshire Asylum*. Res. Med. Supt., W. S. Kay, M.D. Access—Wadsley Bridge, 2 miles.

Wakefield.—*West Riding Asylum*. Res. Med. Supt. and Director, W. Bevan Lewis, L.R.C.P., Lon. Access—Kirkgate and Westgate station, 1 mile.

Wallingford (Berks). — *Berks County Asylum*.—Res. Med. Supt., J. W. A. Murdock, M.B. Access—Cholsey, 1 mile.

Warwick.—*Midland Counties Idiot Asylum*, Knowle, nr Birmingham. Res. Supt. and Sec., W. G. Blatch. Med. Off. R. H. Foster, M.R.C.S. Access—Knowle station, ½ mile.

Waterford. — *District Asylum*. Res. Med. Supt., J. A. Oakshott, M.D. Access—Waterford and Kilkenny sta., 2 miles.

St. Patrick's Inst., Belmont Pk. Conducted by the Brothers of Charity. Med. Supt., Dr. W R. Connolly.

Wells.—*Somerset and Bath Asylum*, Wells, Som. Res. Med. Supt., A. Law Wade, M.D. Access—Wells, 2 miles; Masbury, 2½ miles.

Whitchurch (Salop).—*St. Mary's House* (ladies only). Res. Med. Supts., S. T. Gwynn, M.D., and C. H. Gwynn, M.D. Access—Whitchurch station, 1 mile.

Whitefield (near Manchester.)—*Overdale*. Res. Med. Supt., J. Holmes, M.D. Access—Prestwich and Whitefield sta., 1½ miles; Molyneux Brow, ¼ mile.

Whittingham (near Preston).—*County Asylum*. Res. Med. Supt., Dr. Frank Perceval. Access—Grimsargh station, 1¾ miles; Whittingham station, 3 minutes.

Winchelsea (Sussex). — *Periteau House*, near Hastings (5 ladies). Prop., Mrs. R. V. Skinner. Med. Supt., E. W. Skinner, M.D. Access—Winchelsea sta., 1 mile.

Woking.—*Surrey County Asylum*, Brookwood. Res. Med. Supt., Dr. J. E. Barton. Access—Brookwood station, 1¼ miles.

Worcester.—*County & City Lunatic Asylum*, Powick. Res. Med. Supt., Dr. G. M. P. Braine-Hartnell. Access—Worcester 4 miles.

York. — *The Pleasaunce*, Heworth Moor. Prop. and Med. Supt., G. I. Swanson, M.D. Access—York, 1½ miles.

The Friends' Retreat. Res. Med. Supt., Bedford Pierce, M.D. Access—York, 1 mile.

North Riding of Yorkshire Asylum. Res. Med. Supt., J. Tregelles Hingston. Access—York, 2 miles.

York Lunatic Asylum, Bootham. Res. Med. Supt., C. K. Hitchcock M.D. Access—York, 1 mile.

TRAINING INSTITUTIONS.

Bath.—*Rock Hall House*, Combe Down, near Bath. A training inst. for backward and imbecile children. Lady Supt., Miss Jane Quinton. Med. Off., J. H. H. Lawrence, M.R.C.S. Clerk, E. N. Fuller, LL.B., Bath.

Chilcompton (nr. Bath).—*Downside Lodge.* Med. Supt., Alex. Waugh, M.D. Access—Chilcompton station, about ¼ mile.
See also p. 816.

Dublin.—*Stewart Institution*, Palmerston, Chapelizod, Co. Dublin. For imbecile children. Med. Supt., Dr. F. E. Rainsford.

Dundee.—*Baldovan Asylum.* For the Training and Education of Imbecile Children. Matron, Miss Butter. Vis. Phys., Dr. Greig. Access—Baldovan, 1 mile.

Kingston-on-Thames (Surrey).—*Conifers*, for the Education and care of Girls needing special oversight under medical guidance. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station. 8 minutes.
See also p. 815.

Normansfield. A Training Institution and Home for backward and feeble-minded children and adults of either sex. Med, Supt., Dr. Langdon Down. Access—Hampton Wick, 5 minutes.
See also p. 815.

Somerleyton. For Education of a few Boys of good social position, subject to epilepsy without mental complications, under medical guidance. Access — Hampton Wick, 10 mins.

Trematon. For the Education of Boys unsuited by mental or moral weakness for an ordinary school. Med Supt., Dr. Langdon Down. Access—Hampton Wick station, 5 minutes.
See also p. 815.

Winchester House, Kingston Hill. For backward and feeble-minded Children. Res. Med. Supt. Dr. Fletcher Beach. Acc.—Norbiton, S.W.R., 15 min.
See p. 816.

Lancaster.—*Royal Albert Asylum* (for idiots and imbeciles of the Northern Counties. 600 patients). Principal and Sec., Jas. Diggens. Res. Med. Supt., Dr. A. R. Douglas. Admission by election, or at various rates of payment. Access—Lancaster, 1 mile.

Brunton House. A Home for special Private Pupils under training at the Royal Albert Asylum. Private Pupils received from all parts of the country. Prin., and Sec.. James Diggens. Access as above.
See also p. 817.

Larbert (Stirlingshire). — *Scottish National Inst.* (for Education of imbecile Children). Res. Supt., A. A. Skene. Med. Officer, Dr. R. D. Clarkson. Sec. & Treas., A. J. Fitch, Virginia buildings, Glasgow. Access—Larbert, ¾ ml.

Maidstone (Kent).—*Bearsted House.* School and Home for the Feeble-minded. Res. Supt. and Prop., G. T. A'Vard. Access—Bearsted, C. and D.R., 5 mins.
See also p. 814.

Polton (Midlothian).—*Mavisbush.* Home and School for Imbeciles. Res. Med. Supt., W. W. Ireland, M.D. Access—Polton.

Richmond (Surrey). — *Ancaster House*, Richmond Hill. A small and select Educational Establishment for backward and mentally-feeble children (*not* idiots). Res. Med. Supt., G. E. Shuttleworth, B.A., M.D. Access—Richmond, S.W.R., M.D. & N.L.R., 1 mile.
See also p. 817.

Southgate (Middlesex). — *Brook House.* For Education & Training of the nervous and backward. Res. Med. Prop., Harry Corner, M.D.
See also p. 812.

Inebriate Homes.

LICENSED UNDER THE ACTS, 1879-1898.

The patient must sign a Form expressing a wish to enter the Home, before a magistrate. This can be done at the private residence of the patient, or at the retreat, if previous notice has been given. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

* NOTE:—Bedfont and Chiswick are Roman Catholic Religious Institutions.

MALES ONLY.

Bristol.—*Kingswood Park* (Patients 18). Res. Med. Supt., Dr. W. D. Henderson. Res. Supt., T. W. Brimacombe. Access—Mangotsfield, 2 miles; Bristol, 4 miles; Bath, 8 miles. *See also p.* 820.

Buntingford (Herts).—*Buntingford House Retreat* (Patients 35). Res. Med. Licensee, Norman Davis, M.D. Access — Buntingford (G.E.R.), ¼ mile.

Folkestone. — *Capel Lodge* (Patients 10). Res. Prop., E. Norton, M.D. Access—Folkestone Junction, 2 miles.

Kingsland (Herefordshire).—*Street Court* (Patients 12). Res. Med. Supt. and Licensee, Dr. W. F. Walker, J.P. Access—Kingsland station, 1½ miles; Leominster, 6 miles. *See also p.* 818.

Rickmansworth (Herts).—*Dalrymple Home* (Patients 20). Res. Med. Supt., F. S. D. Hogg, M.R.C.S. Access — Rickmansworth station, Metropolitan Railway, ½ mile; L. & N.W. Railway, 1 mile. *See also p.* 818.

Sutton Coldfield (Warwickshire).—*Aston Hall* (Patients 10). Med. Supt., Dr. H. J. D. Mackay. Con. Phys., E. Rickards, F.R.C.P. Access—Sutton, 4 miles; Walsall, 6 miles; Birmingham, 11 miles. *See also p.* 819

Twickenham.—*High Shot House*, (Patients 12). Res. Med. Supt., A. E. Neale, M.B., B.S. Access—St. Margaret's station from Waterloo, 300 yards; Richmond, 1½ miles. *See also p.* 820

MALE OR FEMALE.

Amesbury (Wilts). — *Amesbury House* (Patients 3). Res. Supt. and Med. Officer, P. J. Barcroft, M.R.C.P., F.R.C.S. Access—Salisbury, 8 miles; Porton station, 4 miles. *See also p.* 821.

Westgate on-Sea. — *Tower House Retreat* (Patients 20). Prin. and Licensee, T. Bridgeman Smith. Access—Westgate-on-Sea, 5 mins.

FEMALES ONLY.

Bedfont (Middlesex).*—*Spelthorne St. Mary* (Patients 10). Supt., Sister in Charge. Med. Officer, H. W. Newton, M.R.C.S. Access — London, 11½ miles; Feltham, S.W. Rly., 1 mile.

Bristol. — *Royal Victoria Homes*, Horfield Home (Patients 20). Access—Ashley Hill, Montpelier, & Redland stations, 10 minutes; Bristol (Temple Meads) 3¼ miles. Brentry Home (Patients 50). Access—Clifton Down, Redland or Patchway Stations 3 miles. Res. Supt., The Warden.

Chiswick.*—*St. Veronica's Retreat* (Patients 40). Under the care of the Sisters of Nazareth. Med. Supt., John J. Atteridge, M.D. Access—Chiswick station, ½ mile.

Croydon.—*Addiscombe Lodge*, 71, Lr. Addiscombe Rd. (Patients 7). Licensee, J. M. Hobson, M.D. Access, East Croydon, 10 mins.
See also p. 821.

Fallowfield.—*The Grove Retreat*, near Manchester (Patients 25). Licensee, Mrs. M. Hughes. Med. Offs. A. T. Wilkinson, M.D. and J. W. Hamill, M.D. Access—Fallowfield, 10 minutes.

Stretford (near Manchester).—(Patients 10). Supt. Mrs. E. Pritchard.

Wandsworth.—*Northlands Retreat*, North St., Old Wandsworth, S.W. (Patients 5). Supt., Mrs. E. A. Blackmore. *See also p.* 821.

HOMES CERTIFIED UNDER THE INEBRIATES ACT, 1898.

Male and Female.

Bristol. — *Royal Victoria Homes*, Brentry. Beds 200, for cases under Sec. I. & II. of the Act. Res. Supt., The Warden. Med. Officer, Dr. Ormerod.

Females Only.

Ashford (Middlesex).—*St. Joseph's Home.* Beds 56, for Roman Catholic cases under Sec. II. of the Act. Res. Supt., The Mother Superior.

Cradley Heath (Staffs.) — *Corngreaves Hall* (Patients 20). Lic., Rev. J. H. Richards. Med. Offcr., Dr. Arkwright. Ac.—Cradley Old Hill & Halesowen Stats. 1½ miles.

Reigate (Surrey). — *Duxhurst.* Beds 16, for selected cases under Sec. II. of the Act. Res. Supt., The Sister in charge.

UNLICENSED HOMES.

Females Only *(except Bristol, Hemel Hempstead, and Stonehaven).*

Birmingham.—*Congreave Hall*, Croxley Heath. Supt., Miss Parish, 93, City Road, Birmingham.

Bristol.—*Dunmurry*, Sneyd Park, near Clifton. Res. Med. Prop., Jas. Stewart, B.A., F.R.C.P. Ed., and Mrs. Stewart. Access—Bristol or Clifton Down sta., 1¼ mile from the latter. *See also p.* 819.

Cheltenham.—*Court House*, Priory Road. Supt., M. Douglas Scott.

Croydon.—*St. Raphael's*, Woodside. Supt., The Matron. Access—Woodside station, Croydon.

Dunvegan, Skye, N.B.—*Cuchulin House.* Res. Med. Supt., Wm. Stephen, M.A., M.D. Access—Kyle Akin.

Durham. — 25, Aldergate. Hon. Sec., Miss E. L. King.

Edinburgh.—*Queensberry Lodge.* Supt., Major Macartney. Med., Supt., Dr. William Russell. Access—Waverley station, ½ mile.
See also p. 818.

Hemel Hempstead.—*Sanatorium.* Res. Med. Supt., C. A. McBride, M.D. Access—Boxmoor station, ½ mile.

Herne Hill.—*Ellison Lodge*, Half Moon Lne. Res. Supt. Miss Hogg.

Highgate.—*Moredun*, Highgate, N. Res. Med. Supt., C. A. McBride, M.D. Access—Highgate station, 3 mins.

Hounslow (Middlesex). — *West Holme.* Supt., Matron in Charge. Med. Supt., Dr. G. A. S. Gordon. Access — Richmond (Surrey), 4 miles; Staines (Middlesex), 4 miles; Hounslow, (S.W.R.), ¾. Dist. R. ¼ mile.

Huddersfield (Yorks).—*High Flatts Sanatorium.* Supt., The Matron. Med. Supt., Dr. A. C. J. Wilson. Access—Denby Dale, 1½ miles; Penistone sta., 3½ miles.

Leicester. — *Melbourne House.* Prop., Mr. H. M. Riley. Med. Supts., C. J. Bond, F.R.C.S., and J. Headley Neale, M.B., M.R C.P. Station, 2 miles. *See also p.* 819.

Tower House. Prop., Mrs. Theobald. Med. Attendant, Dr. Clarke. Access—Leicester stat., 1½ miles. *See also p.* 820.

Liverpool.—*Temperance Home*, 318, Upper Parliament Street. Supt., Miss A. J. Wilson.

Reigate (Surrey).—*Duxhurst.* Supt., Sister in charge. Med. Supt., A. Walters, M.R.C.S. Access—Reigate, 4 miles *See also p.* 816.

Stonehaven (N.B.) — *Elsick House.* Prop., D. Forbes. Med. Supt., Dr. Leslie. Access—Newton Hill, 1½ miles. *See also p.* 821.

Sydenham.—*The Tor.* Hon. Sec., Mrs. Atkinson. Med. Supt., Dr. Gardener.

Torquay. — *Temple Lodge.* Hon. Sec., Mrs. Erskine. Med. Supt., Dr. T Finch.

West Derby (near Liverpool).—*Vergmont Sanatorium.* Supt., Miss Mary M. Hocking. Hon. Med. Offis., Dr. H. Harvey and Dr. C. Thurstan Holland. Access—West Derby, ¼ mile; The Brook, ¼ mile; Edge Hill, 3 miles.

Hydropathic Establishments of Great Britain.

We wish to make this list complete, but it is impossible when some Proprietors do not return our letter of enquiry which is *stamped for reply.* This will account for some omissions in the present edition.

Aberdeen. — *Deeside Hydropathic*, Murtle, near Aberdeen. Res. Med. Supt., Alex. Stewart, M.D., LL.D., F.S.Sc. Access—Rail to Aberdeen, thence to Murtle station on the Deeside line, 5 miles from Aberdeen; from this station, 8 minutes. *See also p.* 829.

Baslow. — *Baslow Hydropathic*, near Chatsworth Park. Res. Med. Supt., E. M. Wrench, F.R.C.S. Access—Bakewell station, 4 miles by 'bus.

Bath. — *Lansdown Grove House*, Lansdown, Bath. (Invalids only). Access—Mid. or G.W. station, Bath, about 1 mile. *See also p.* 828.

Ben Rhydding. — *Ben Rhydding*, Near Leeds, Bradford, or Harrogate. Phys. Thos. Scott, M.D. Access—Station, a few hundred yards.

Bishops-Teignton (near Teignmouth).—*The South Devon Health Resort.* Prop., C. F. Carpenter. Med. Supt., J. Wood, M.B. Access—Teignmouth 2½ mile.

Blackpool.—*Matlock Hydro.* Station Road. Prop., W. Bramald. Access—3 minutes from South Shore station.

Bournemouth (Hampshire).—*Bournemouth Hydropathic.* Res. Prop., W. J. Smyth, M.D. Access—East sta. 1½ mile; West sta. ¼ mile. *See also p.* 828.

Southcliffe. Res. Prop., E. P. Philpots, M.D.

Bridge of Allan.—*Bridge of Allan Hydropathic Co.* Mngr, H. B. Higgins. Access—Station, ½ mile.

Bristol.—*The Bristol Hydropathic* (formerly Bartholomew's Turkish Baths), College Grn. Res. Phys., W. J. Spoor, M.B., M.R.C.S.

Bute.—*Kyles of Bute Hydropathic*, Port Bannantyne, Rothesay. Man., A. Menzies. Med. Supt., Dr. A. J. Hall. Access—Clyde steamers call daily.

Buxton. — *Buxton Hydropathic*, Man. Director, Mr. H. Lomas. Access—Station, 4 minutes.

Corber Hill Hydro, Clarendon House. Man., Miss K. Adams. Access—Buxton station, 5 mins.

Haddon Hall and Haddon Grove Hydros. Prop., Mr. G. E. Hall.

Clevedon (Somerset). — *Clevedon Hydropathic.* Med. Supt., R. T. Morgan. Access—Clevedon, 1 mile.

Clifton (near Bristol).—*Clifton Spa & Hydropathic.* Res. Phys. C. J. Whitby, M.D. Access—Clifton Down station, 1 mile; Bristol station, 1½ miles.

See also p. 827.

Colwyn Bay (North Wales).—*Colwyn Bay Hydropathic and Winter Residence.* Med. Supt., Dr. W. M. V. Williams. Access—Colwyn Bay station, 7 minutes.

Cork.—*St. Ann's Hill Hydropathic.* Res. Phys., Dr. A. G. Bennett. Access—Blarney Station, 2½ miles. Muskerry Light Railway from Cork, station on grounds.

Crieff.—*Strathearn House* (17 miles from Perth). Res. Med. Supts., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff station, 1 mile.

Dunblane. — *Dunblane Hydropathic*, Perthshire. Res. Phys. Access—Dunblane station.

See also p. 826.

Eastbourne. — *The Eastbourne Hydropathic*, South Cliff. Cons. Phys., Henry Habgood, M.D. Access—Eastbourne.

Edinburgh.—*Hydropathic.* J. Bell, Man. Dir. Access—Merchiston, 1 mile; Waverley, 3 miles.

Forres. — *Cluny Hill Hydropathic.* Access—Forres station, 1 mile; Inverness, 24 miles.

Grange-over-Sands. — *Hazelwood Hydropathic.* Physicians. Richard Lowther, M.D., and Owen Gwatkin, M.R.C.S. Access—Carnforth, L. & N.W.R., and thence by Furness Railway. Grange-over-Sands, ¼ mile.

See also p. 830.

Harrogate (Yorkshire).—*Harlow Manor Hydro.* Man. Mr. Fenn, Med. Supt., Dr. Dimmock.

The Cairn Hydropathic. Near Leeds and Bradford. Man., Mr. Alderson. Access—Harrogate, 1 ml.

The Harrogate Hydropathic. Phys., Geo., Tennant, M.B. Access—Harrogate, ½ mile.

Hastings (St. Leonards). — *The Hastings Hydropathic and Spa.* Access—Hastings station, 1 mile.

Hexham (Northumberland).—*Tyndale Hydropathic.* Prop., F. G. Grant. Med. Supts., Thos., Stainthorpe, M.D. and Dr. Stewart. Access—Hexham, 1 mile; Newcastle, 19 miles.

Ilkley (Yorkshire). — *Craiglands Hydropathic.* Props., Dobson, Bros. Res. Med. Supt., Henry Dobson, M.D., C.M.

Ilkley Wells House Hydropathic. Med., Supt. Thos. Scott, M.D. Manager, Mr. Ballardie. Access—Ilkley station, ¼ mile.

The Spa Hydropathic. Near Leeds and Bradford. Med. Supt., Thos. Johnstone, M.D. Access—Ilkley, Yorks, M., G.N. & N.E.R., Ilkley, 3 minutes.

Kilmalcolm (Renfrewshire).—*Hydropathic.* Manageress, Miss G. Thomson. Access—Greenock, 7 miles; 16 miles from Glasgow, S.W.R.

Limpley Stoke (near Bath).—*West of England Hydropathic.* Res. Med Supt, T. G. Drake, L.R.C.P. Access—Limpley Stoke station.

Lincoln.—*Northcote Hydro.* (Woodhall Spa).—Apply to secretary.

Liverpool.—*New Hydro Hotel*, West Kirby. Res. Med. Supt., Dr. P. J. Wilkinson. Access — West Kirby station, 5 miles.

See also p. 829.

Llandudno.—*Hydropathic and Winter Residence.* Med. Supt., James Craig, M.B. Access—Llandudno Station, 5 minutes.

Malvern.—*The Malvern Hydropathic* (late Dr. Rayner's). Res. Prop., J. C. Fergusson, M.D. Access—Gt. Malvern station, ½ mile.

See also p. 825.

Wyche-side Hydropathic. Res. Phys., Dr. Grindrod. Access—Malvern Wells G.W.R., ½ mile.

Matlock.—*Darley Dale Hydropathic.* Prop., William Atkin. Med. Supt., Dr. W. Moxon. Access—Matlock Bridge station, 1¼ mile; Darley Dale, ½ mile.

Matlock House Hydropathic. Matlock Bank. Med. Supt., W. Moxon, M.D., M.R.C.S. Access—Matlock Bridge (M.R.). ¼ mile.

Smedley's Hydropathic, Matlock Bridge. Phys., W. C. Sharpe, M.D., and a Res. House Phys. Access—Matlock Bridge station, ½ mile; Omnibus. *See also p.* 824.

Melrose.—*Waverley Hydropathic.* Con. Phys., Dr. Wade. Access—Melrose station, 1 mile.

Moffat.—*The Moffat Hydropathic.* Prop., J. Farquharson. Med. Supt., Dr. T. B. White.

Peebles.—*Peebles Hydropathic and Hotel.* Med. Specialist, Herr R. Petzkey. New Department now complete with Douche and Massage, with the new Electric Light Therapy, Pure Air and Sun Baths, Earth Treatment, and Kneipp's Methods. Access—Peebles station, ¾ mile.

See also p. 823.

Pitlochry. — *Atholl Hydropathic.* Prop., W. Macdonald. Closed in winter. Access—Pitlochry 1 ml.

Rhyl.—*North Wales Hydropathic.* Med. Supt., Dr. R. M. Pritchard.

Rothesay.—*Glenburn Hydropathic.* Res. Phys., Dr. Philp.

See also p. 826.

Scarborough.—*Hydropathic,* West Bank. Prop., R. B. D. Wells. Med Atten., Dr. Megginson. Access—Scarborough station (N.E. Ry.), ¼ hour.

Shandon. — *Shandon Hydropathic.* Med. Supt., Dr. Douglas Reid. Access—N.B.R. and Steamer.

Southport (Birkdale Park).—*Smedley Hydropathic.* Med. Supt., J. G. G. Corkhill, M.B., B.Ch. Vict., M.R.C.S. Eng. Southport 1½ miles; Birkdale, ⅓ mile.

See also p. 829.

"Sunnyside" Hydropathic. Prop., J. Boocock. Phys., Dr. F. A. Ernest Barnardo. Access—Southport stats., ½ mile.

Kenworthy's Hydropathic (51, Bath Street). Phys., Dr. A. B. Kenworthy. Access—Chapel St., Lord St., or Central stat., ¼ mile.

Tunbridge Wells.—*The Spa.* Phys., Dr. G. L. Pardington. Access—Station, about ½ mile.

Ulverston and Barrow-in-Furness.—*Conishead Priory Hydropathic.* Access—Ulverston station.

Watford.—*The Hall,* Bushey. Res. Phys., J. G. Gordon-Munn, M.D., Access—L. & N.W.Ry. 1 mile.

Wemyss Bay.—*Wemyss Bay Hydropathic.* Med. Sup., Ronald Currie, M.D. Access—Wemyss Bay sta., ½ mile.

Windermere. — *Windermere Hydropathic,* 9 miles from Kendal. Access—Windermere (L. & N.W. R.) 1 mile. Furness Rly. (Bowness Landing), ¼ mile. Pier on Lake, about 300 yards.

Private Homes for Invalids.

Brighton.—*Stavely House*, 24, Wilbury Road, Hove. Access — Brighton & Hove stations, 1 mile

Evesham (Worcs.) — *Greenhill.* Principal, Mrs. Hoddinott. Acc. —M. & G.W.R. stat., Evesham.

Farnham, Aldershot. — *Heather Brow.* Med. Supt., Dr. Leslie.

Hadlow Down (Buxted, Sussex.) —*South Beacon.* Prop., Philip H. Harmer. Access—Buxted, 3 miles; Heathfield, 4 miles.
See also p. 813.

Jedburgh.—*Abbey Green.* Res. Prop., Wm. Blair, M.D. Access—N.B.R., Jedburgh. *See also p.* 800.

London.—*Nursing Home*, 29, Upper Montague Street, W. Prop., Mrs. Baunsall. Access—Baker Street station (Metropolitan), 5 minutes.

Private Medical and Surgical Home, 23 & 25, Clapton Common. Res. Med. Supt., Dr. Henry J. Buck.

Penzance.—*St. Winifred's*, Marazion. Prop., Miss W. Leicester St. Aubin. Access—Marazion station, ¾ mile; Penzance, 3 miles.

Stanmore, Middlesex.—*Mary Wardell Convalescent Home for Scarlet Fever.* Hon. Sec., Miss M. Wardell. *See also p.* 801.

Torquay. — *Coombehurst Medical Home*, Newton Rd., Torre. Open-Air Treatment for Consumption. Access—Torre and Torquay stations, 3 minutes.

Weston-super-Mare.— *Rockwood.* Prop., J. A. Raye, Physician and Surgeon.

Nursing Institutions and Associations.

The information given here is necessarily brief: but further particulars may be added, in small type, at the rate of 2/- per dozen words.

LONDON.

Baker Street Association of Trained Nurses (Regd.), 15, Baker Street, W. Supt., Miss Masters.
Telegraphic Address—"Womanly, London." Telephone No. 1010, Paddington.

Belgravia Nursing Home, 39 and 41, Royal Avenue, Chelsea, S.W. Principals—Mrs. Walter Pye and Mrs. Richard Crawley.
Surgical, Medical (non-infectious), Confinement, & Weir-Mitchell cases received. Terms from 4 to 12 guineas per week. Fully qualified Nurses also sent out.

Blackheath Nursing Inst., 9, Montpelier Row, Blackheath, S.E. Supt.—Miss Duncan.

Brompton Hosp. Private Nursing Department, S.W. Miss C. Davidson, Lady Supt.

Camberwell District Nursing Assoc. for Nursing the Sick Poor Free of charge. Knatchbull Rd., S.E. Supt.—M. Dodds.

Clapham, Brixton & Surrey Inst. of Trained Nurses, 210, Clapham Road, S.W. Supt., Mrs. A. M. Pyle.

Clapham Common Home & Nursing Inst., 45, South Side, Clapham Common, S.W. Supt., Mrs. Chapman.

Colonial Nursing Assoc., Imperial Institute, London, S.W. Hon. Sec., Mrs. Francis T. Piggott.

Elgin Nursing Inst., The, 258, Elgin Avenue, W., and Alassio, N. Italy. Supt., Miss Ellison.
See also p. 799.

General Nursing Institute, 5, Mandeville Place, Manchester Square, W.

Guy's Hospital Trained Nurses' Inst., 14, St. Thomas Street, S.E.

Hamilton Assoc. for Providing Trained Male Nurses, 57, Park St., Grosvenor Sq., W. Supt.—G. H. Henlen. *See also p.* 800.

Hampstead Hospital Nursing Staff, Parliament Hill, N.W. Lady Supt., Mrs. Ebbetts.

Hanover Inst. for Nurses and Private Hosp., 22, George St., Hanover Square, W. Lady Supt., Miss Sophia Walker.

Holy Cross Society of Trained Nurses, 2 Ladbroke sq., Notting Hill, W. Lady Supt., Sister Clare.

Hooper, Miss, *Nurses Institution*, 9, Upper Baker Street, N.W.

See also p. 800.

Hospital for Sick Children, Private Nursing Home, Gt. Ormond St., W.C. Matron, Miss Gertrude Payne.

London Association of Nurses, 123, New Bond St., W. Lady Supt., M. Firth.

London Homœopathic Hospital Nursing Inst., Great Ormond St., W.C. Lady Supt., Miss Brew.

London Hospital Private Nursing Inst., Whitechapel Road, E. Matron, Eva C. E. Luckes.

Male Nurses (Temperance) Co-operation, 10, Thayer Street, W. Sec., F. Rouse.

Maternity Charity and District Nurses' Home, Howard's Road, Plaistow, E. Monthly Nurses supplied. Matron, Miss K. Twining.

Medical & Surgical Home & Nursing Inst., 39 & 41, Boundary Road, N.W. Supts., Miss Spreat and Mrs. Dalison.

Chronic and Accouchment Cases taken. Fees moderate.

Mental Nurses' Co-operation, 1, New Quebec Street, Portman Square, W. Lady Supt., Miss M. Stewart.

Supplies ***Specially Trained*** Mental Nurses. ***Male and Female*** for all Mental Cases.

Metropolitan Nursing Assoc., 23, Bloomsbury Sq. For nursing the Sick Poor. Supt., Miss Haddon.

Middlesex Hospital Institute, 17, Cleveland Street, W.

Midwives' Inst., 12, Buckingham St., Strand, W.C. Apply Secretary.

Mildmay Deaconess Inst., Nursing branch, 9 & 10, Newington Green, N. Supt., Miss Dean.

Trained Sisters and Nurses are sent to private families, on application to Resident Superintendent, as above.

See also p. 799.

Nervous & Mental Disorders, Nurses for, 1 Culross Street, Grosvenor Sq., W. Supt., Mrs. Caldwell.

Nursing Sisters' Inst., 4, Devonshire Sq., E.C. Lady Supt., Miss Steuart.

Paddington and Marylebone District Nursing Association, 4, Randolph Road, W. Supt. Miss K. Perssé. Hon. Secs., Mr. W. F. Richmond and Miss G. H. Richmond.

Pembroke Nursing Inst. and Home for Paying Patients, 116, Adelaide Road, N.W. Matron, S. Gee Wright, cert. L.O.S.

Queen Victoria's Jubilee Inst. for Nurses, St. Katherine's, Regents Park, N.W. For supplying trained District Nurses for the Poor. Sec., Alice Martin Leake.

Registered Nurses' Society, 269, Regent Street, W. Sec., Miss Cartwright.

Royal British Nurses' Assoc., 17, Old Cavendish Street, W.

St. Bartholomew's Hosp. Nurses Institute, 13, West Smithfield.

St. John's, 21, Drayton Gardens, S. Kensington. Sist. Superior, A. J. Beaver.

St. John Ambulance Association, St. John's Gate, Clerkenwell.

St. John's House, 7 & 8, Norfolk St., Strand. Supt., the Sister Superior. Sec., Ernest R. Frere, Esq.

Southwark, Newington & Walworth District Nursing Assoc. 37, West Sq., S.E. Supt., L. L. Ward.

Up-Country Nursing Assoc. for Europeans in India. Hon. Sec., Major-Gen. J. Bonus, R.E., The Cedars, Strawberry Hl., Middlesex

Victoria Hospital, Nursing Staff, Chelsea, S.W. Matron, Miss Hamilton.

Medical and Surgical Nurses supplied for all cases, 42/- per week.

Westminster Home for Nurses, 27, Queen Anne's Gate, S.W. Supt., Miss J. Southwell.

Wigmore Nurses' Co-operation, 59, Weymouth St., W. Princ., Florence Burrell.

PROVINCIAL.

Ayr.—*Ayr, Newton and Wallacetown Sick Poor Nursing Association*, 22, Academy St. Sec., Mrs Hutton.

Bath.—*Home for Trained Nurses*, 44, Rivers St. Lady Supt., Miss F. E. Latham.

Royal United Hospital Private Nursing Instit., Matron, Mrs. Mathias.

Ordinary Cases, per week 25/-. Operation Cases, per week 31 6. Infectious Cases Typhoid included), per week 42/-.

Belfast.—*Nurses' Home and Training School*, Frederick St. Lady Supt., Miss Newman.

Birmingham.—*Birmingham & Midland Homœopathic Hospital*. Lady Supt., Miss Bean.

District Nursing Society, 94, Moseley Road; Lady Supt., Miss Waller. 98, Newhall St.; Lady Supt., Miss Peterkin.

Queen's Hospital, External Nursing Depart. Supt., Charlotte Elkington.

Bournemouth. — *Victoria Nurses' Institute and Home Hospital*, Cambridge Rd. Matron, C. Forrest. Access—Bournemouth West stat.

Bridlington.—*Lloyd Cottage Hosp.* Supt., Miss A. Maud Jones.

Brighton.—*Home for Trained Nurses and Paying Patients*, 92, King's Road, Supt. Mrs. Frazer.

Male and Female Nurses, 115, Queen s Road, Brighton, and 73, Clifton Road, Worthing. Secy., Edward Yates.

Sussex County Hospital Private Nursing Inst. Matron, Katharine Scott.

Bristol.—*District & Private Nurses' Home*, 6 Berkeley Sq., Clifton. Lady Supt., Florence E. Lloyd.

General Hospital.

Nurses' Co-operation and Home, Westbourne Place, Clifton. Supt., Miss Rogers. *See also p.* 800

Nurses' Home, 23 & 24, Richmond Terrace, Clifton. Lady Supt., Miss Thompson-Hill.

Telephone No. 5555. Telegraphic Address: "Nurses, Bristol." Fully Trained Mental, Medical, Surgical, and Monthly Nurses. Surgical Patients received at from £2 2s. weekly. *See also p.* 799.

Royal Infirmary Private Nursing Inst. Matron, Miss A. B. Baillie.

Broughton and Kersal.—*Nurses' Institute and Nursing Home*, 303 and 305, Great Clowes Street, Higher Broughton. Supt., Mrs. French.

Burton-on-Trent.—*Nursing Inst.*, 59, Union Street. Supt., Miss E. Carson.

Cambridge.—*Home for Nurses*, 13, Fitzwilliam St. Lady Supt., Miss Rogers.

Cheltenham.—*General Hospital* Private Nursing Staff. Matron,

Medical, Surgical and Monthly Nurses can be supplied, on application, by letter or telegram, to the Matron. Telephone No. 26.

Chester. — *District Nurses' Home*, Water Tower St. For providing Trained Nurses for the Poor in their own Homes. Deaconess-in-charge, Sister Mabel.

Cork.—*County and City of Cork Hospital for Women and Children.* Lady Supt., Miss M. H. Baxter.

Nursing Institution, 11, South Mall Hon. Lady Supt., Miss Woodroffe.

Coventry. — *District and Private Nursing Inst.*, Bishop St. Matron. Miss Wing.

Derby.—*Royal Derby and Derbyshire Nursing Association*, London Rd. Lady Supt., Miss Agnes Atthill.

Devonport.—*Royal Albert Hospital Nursing Institution.* Matron, Miss Glover.

Dublin. — *City of Dublin Nursing Institute, ltd.*, 27, Upper Baggot Street. Lady Manager, Mrs. R. K. Treacy.

Dr. Steevens' Hospital Private Nursing Inst. Supt., Miss B. M. Kelly.

Redcross Nursing Sisters' House & Training School for Nurses, 87, Harcourt Street. Supt., Miss Alison Lyons.

Rotunda Lying-in Hosp. Nursing Home, Great Britain St. Lady Supt., Miss Lucy Ramsden.

St. Patrick's Nurses' Home, 101, St. Stephen's Green, for supplying Trained Nurses to the Sick Poor in their own Homes free of charge. Supt., Miss F. Franceys Howell.

Edinburgh.—*Royal Scottish Nursing Inst*, 69, Queen Street and 14, Castle St., Dumfries. Matron, Miss King.

Woodburn, Canaan Lane. Lady Supt., Mrs. Mears, L.R.C.P.I.

Exeter.—*Devon and Exeter Hosp.* Matron, Miss Pepper.

Trained Nurses' Inst. (founded 1866), Colleton House. Sec. and Supt., Miss M. Mathew.

Frome.—*Home for Trained Nurses*, South Parade. Supt., Miss M. I. Briggs.

Gainsborough. — *District Nursing Assoc.* 14, Kebir Ter. Two District Nurses (Sister Flora and Sister Edith).

Glasgow.—*Hillhead Nursing Inst.*, 66, Craigmaddil Ter., Sandyford. Supt., Mrs. Campbell.

Sick Poor and Private Nursing Association 218, Bath St. Supt., Miss Berwick.

Training Home for Nurses, 250, Renfrew St. Hon. Supt. Miss McAlpin.

Guildford.—*Nurses' Inst. and Home for Private Patients.* Lady Supt., Miss E. M. Waind.

Harrogate.—*Trained Nurses' Inst.*, Ripon Rd. Supt., Miss Anderson.

Medical, Surgical, and Massage Cases taken in the Home. Terms on application.

Hereford.—*Nursing Association* for nursing the Poor free of charge in their own Homes.

Honiton.—*District Nursing Assoc.* for the Poor. Supt., Miss Fortescue, The Rectory.

Hull.—*Royal Infirm.* Lady Supt., Miss M. L. Rannie.

Leamington.—*Warneford, Leamington and South Warwickshire General Hospital and Bathing Institution.* Sec., R. J. Coles.

Leicester.—*Nurses' Co-operation*, Welford Road. Supt.,

Nurses' Inst. Aylestone Road. Lady Supt., Miss J. M. McHardy.

Limerick.—*Barrington's Hosp. and City of Limerick Infirm.* Matron, Miss Haughton. Registrar and Treas., R. R. Parsons, Esq.

Lincoln.—*Institution for Nurses.* Lady Supt., Miss H. Bromhead.

Liverpool. — *Training School and Home for Nurses*, Ashton Street. Supt. Miss Charlotte M. Bann.

Manchester.—*Maternity Hosp.*, 60, Upper Brook St. Matron, Miss Lancaster.

Middlesbrough. — *Nursing Assoc.*, 91 & 93, Gunnergate Ter. Lady Supt., Miss Purvis.

Newcastle-on-Tyne. — *Nurses' Home & Training School*, 2, Granville Rd. Matron, Miss Emery.

Medical, Surgical, and Fever Nurses sent to any part. Telegrams: "Nursing, Newcastle-on-Tyne."

Newport.—*Newport and Monmouthshire Hosp.* Matron, Miss K. Hodgkin.

Northallerton.—*North Riding Rural Nursing Assoc.*, Home for Nurses, Cottage Hospital. Supt., Miss Georgina Atkinson.

Norwich.—*Norfolk & Norwich Hospital.* Lady Supt. of Nurses, Miss D. Burroughes.

Norwich Nurses' Co-operation, 76, Prince of Wales' Road.

Oldham.—*Nursing Association, Lees Nurses' Home*, Union Street West, Oldham. Supt., Miss Mary T. Nicholson.

Portsmouth.—*Royal Portsmouth Hosp.* Matron, Miss M. L. Boulton.

Preston.—*Preston & County of Lancaster Royal Infirm. Private Nurses' Home.* Matron and Supt., Miss Disney.

Reading.—*Royal Berks Hospital*, Private Nursing Staff. Supt., Mary R. Easton.

Rochdale.—*District Nursing Assoc.*, 210, Yorkshire St.

St. Albans.—*Diocesan Institution for Private Nurses.* Matron, Miss M. Flood Jones, Nurses' Home, Witham, Essex.

St. Leonard's-on-Sea.—*Medical and Surgical Home*, 80 Warrior Sq. Supt., Mrs. B. M. Reynolds.

Victoria Nursing Inst., 25, Warrior Gardens. Supt., Mrs. C. Phillips.

Salisbury.—*Nurses' Home.* Supt., Ethel Laurence.

Sheffield.—*St. George's Home for Dist. & Private Nursing*, 19, Sandon Pl. Lady Supt., S. E. Corvan.

Nurses' Home & Training Inst., 334, Glossop Road, Lady Supt., Miss Annie Armstrong.

Shepton Mallett.—*Nursing Assoc. for the Poor.* Hon. Sec., Agnes M. Sherring.

Southampton.—*Hampshire Nurses' Inst.*, Belle Vue. Matron, Mrs. A. Varian.

Southport.—*Birkdale Trained Nurses' Home*, 53, Liverpool Road, also Home for Patients, Supt., Miss M. A. Toule.

Infirmary Nursing Inst. Lady Supt., Miss Alice Clark.

Staleybridge (Cheshire).—*District Nursing Assoc.* Pres. Mrs. E. M. Dickens-Knott.

Stoke-on-Trent.—*Staffordshire Instit. for Nurses.* Lady Supt., Miss Shirley.

Stratford-on-Avon.—*Nursing Home & Children's Hosp.* Supt., Miss Annie Moseley.

Sunderland.—*Nursing Inst. and Home for Trained Nurses.* Supt., Mrs. Hugh Marriner.

Surbiton, Surrey.—*Nurses' Association & Home* for Paying Patients, Claremont Road. Matron, Miss Parnaby. *See also p.* 828.

Swansea.—*General and Eye Hosp. Nursing Staff.* Matron, Margaret Bridger.

Taunton.—*Victoria Jubilee Nursing Inst.* Lady Supt., Miss Lessey.

Wakefield.—*Trained Nurses' Home*, 2, Wentworth Ter. Lady Supt., Miss Elizabeth Reed.

Weston-super-Mare.—*Nursing and Convalescent Home and Nurses' Inst.*, 4 St. Margaret's Ter. Lady Supt., Miss Moorhead.

Five Patients received, home comforts, good rooms. Fully-trained Nurse. Terms moderate. Nurses supplied for all cases.

Winchester.—*Royal Hants County Hospital.* Matron, Miss Mary Mocatta.

Witham (Essex).—*St. Alban's Diocesan Nursing Inst.* Manageress, Miss M. A. Luard.

Wolverhampton.—*Queen Victoria Nursing Inst.* Lady Supt., Miss Loveys.

Worcester.—*City & County Nursing Inst.*, Tything. Lady Supt., Miss M. E. Winterton.

Worthing.—*Medical and Surgical Home*, 7, Marine Par. Principals, Timewell and Maginn.

Wotton-under-Edge.—*Convalescent and Nursing Home.* Matron, Miss Tayler.

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Edinburgh Hospital Reports—Yearly 12/6—Young J. Pentland, Teviot Place

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Entomologist, Monthly Magazine—Monthly 6d — 1, Paternoster Row, E.C.

Entomologist — Monthly 6d — 54, Hatton Garden, E.C.

Geological Magazine—Monthly 1/6—37, Soho Square, W.

Geological Society, Journal of—Quarterly 5/-—Longmans & Co.

Geologist's Association's Proceedings—Quarterly 1/6—E. Stanford, 27, Cockspur Street

Glasgow Medical Journal—Monthly 2/-—A. Macdougall, Mitchell Street, Glasgow

Guy's Hospital Gazette--Fortnightly 6d—42, Southwark Street.

Guy's Hospital Reports—Yearly 10/6—J. & A. Churchill, 7, Great Marlborough Street

Health—Weekly 1d—18, Catherine Street, W.C.

Homœopathic Review—Monthly 1/-—E. Gould & Son, Lim., 59, Moorgate Street, E.C.

Homœopathic World—Monthly 6d—12, Warwick Lane, E.C.

Hospital—Weekly 2d—28 and 29, Southampton St., W.C.

Ibis, the—Quarterly 6/- — Gurney & Jackson, 1, Paternoster Row

International Medical Magazine—Monthly, 10/- per annum—136, Gower Street

Irish Medical Directory—Annually 6/- —Baillière & Co. 20, King William Street, W.C.

Knowledge—Monthly 6d—326, High Holborn

Lancet—Weekly 7d—423, Strand, W.C.

Laryngology, Rhinology, & Otology, Journal of —Monthly 2/—129, Shaftesbury Avenue, W.C.

Laryngoscope, the—Monthly 1/- — Baillière & Co. 20, King William Street, W.C.

Linnæan Society, Journal of — Annually 3/-—14, Henrietta St.

Linnæan Society, Transactions—Irregular. Price varies—Society's Apartments, Burlington House

Liverpool Medical Chirurgical Journal 3/6—Half-yearly — H. K. Lewis, Gower Street, W.C.

Medical and Surgical Review of Reviews — Monthly 1/6 — 34, Victoria Street, S.W.

Medical Age—Semi-monthly, 6/- per annum—W. M. Warren, 21, North Audley Street, W.

Medical Annual—Annually 7/6—J. Wright & Co. Bristol

Medical Chronicle—Monthly 1/6 — John Heywood, Manchester

Medical Directory—Annually 14/-—J. & A. Churchill, 7, Great Marlborough Street

Medical Magazine—Monthly 1/-—62, King William Street, E.C.

Medical Monthly—3d.—3, Victoria Street, S.W.

Medical Press & Circular—Weekly 5d—A. A. Tindall, 20, King William Street

Medical Register—Annually 6/-—299, Oxford Street, W.

Medical Student's Register—Annually 2/6—54, Gracechurch St.

Medical Temperance Review—Monthly 6d–33 Paternoster Row

Medical Times & Hospital Gazette—Weekly 2d—11, Adam St., W.C.

Medicine—Monthly, 8/- per annum—W. M. Warren, 21, North Audley Street, W.

Mental Science, Journal of—Quarterly 5/—J. and A. Churchill, 7, Great Marlborough Street

Meteorological Record—Quarterly—E. Stanford, 27, Cockspur St.

Meteorological Society, Journal of—Quarterly 5/-—E. Stanford, 27, Cockspur Street, S.W.

Microscopical Science, Quarterly Journal of—10/-—J. and A. Churchill, 7, Great Marlborough Street

Microscopy and Natural Science, International Journal of—Quarterly 2/6—Baillière & Co. King William Street

Mind—Quarterly 3/- —Williams & Norgate, Henrietta Street, W.C.

Monthly Extract of British Journal of Dental Science—Subscribers only—322, 324, Regent St., W.

Montreal Medical Journal—Monthly 1/6 — Baillière & Co., King William Street, E.C.

Naturalist—Monthly 6d—Henrietta Street, W.C.

Nature—Weekly 6d—Macmillan & Co. Lim., St. Martin Street

Nervous and Mental Diseases—Quarterly, 18/- per annum—Kegan Paul & Co. Charing Cross Road, W.C.

New Sydenham Society—Irregular—Subscription 21/- —H. K. Lewis, 136, Gower Street

New York Medical Record—Weekly 6d—Kegan Paul & Co., Charing Cross Road, W.C.

New York Medical Journal—Weekly 33, Bedford Street, W.C.

Nursing Directory—Annually 5/—28 & 29, Southampton Street

Nursing Notes—Monthly 2d.—12, Buckingham Street, W.C.

Nursing Record—Weekly 1d—11, Adam Street

Odontological Society, Transactions of—Monthly during Sessions 2/6—87, Great Titchfield Street

Ophthalmic Hospital Reports—Yearly 5/—J. & A. Churchill, 7, Great Marlborough Street

Ophthalmic Review—Monthly 1/—J. & A. Churchill, 7, Great Marlborough Street

Ophthalmological Society's Transactions—Yearly 12/6—J. and A. Churchill, 7, Great Marlborough Street

Pathology & Bacteriology, Journal of—Quarterly—Y. J. Pentland, West Smithfield, E.C.

Pediatrics — Fortnightly 8/- per annum—Great Titchfield Street

Pharmaceutical Journal — Weekly 4d—5, Searle Street, Lincoln's Inn, W.C.

Pharmaceutical Society, Calendar of —Annually 1/- — 17, Bloomsbury Square

Pharmacy, Monthly Magazine of—Monthly 6d—Burgoyne, Burbidges & Co. 16, Coleman St.

Physiology, Journal of—21/- per volume—Ave Maria Lane

Practitioner—Monthly 1/—Cassell & Co. Lim., Ludgate Hill, E.C.

Psychical Society, Proceedings of the —Occasionally–Kegan Paul and Co. Charing Cross Road, W.C.

Public Health—Monthly 1/—129, Shaftesbury Avenue, W.C.

Quarterly Medical Journal, 2/- — Pawson & Brailsford, Sheffield

Quekett Microscopic Club, Journal of—Half-yearly 3/6—Williams and Norgate, 14, Henrietta St.

Registrar General's Return of Births, Deaths & Marriages—Weekly, Quarterly & Annually — Eyre & Spottiswoode, 9, East Harding Street, E.C.

Royal College of Surgeons' Calendar —Annually 1/- — Taylor and Francis, Red Lion Court, Fleet Street, E.C.

Royal Microscopical Society, Journal of—Bi-Monthly, 30/- per annum—Williams & Norgate, Henrietta St., Covent Garden.

Sanitary Journal—Monthly 1/- — North Frederick St., Glasgow

Sanitary Record—Weekly 3d; 10/- per annum—5, Fetter Lane

Scalpel, The — Monthly, 7/6 per annum—Simpkin & Co., Paternoster Row

Science Gossip — Monthly 6d. — 110, Strand

Scientific American — Weekly, per annum 18/- —Kegan Paul & Co. Charing Cross Road, W.C.

Scientific American Supplement— 25/- per annum—Kegan Paul & Co., Charing Cross Road, W.C.

Scottish Medical & Surgical Journ. —Monthly 2/- —W. F. Clay, Teviot Place, Edinburgh

State Medicine, Journal of — Monthly 2/- —Baillière & Co., King William Street, W.C.

St. Bartholomew's Hospital Reports —Yearly—15, Waterloo Place

St Thomas's Hospital Reports— Yearly 8/6—J. & A. Churchill, 7, Great Marlborough Street

Therapeutic Gazette—Monthly, 10/- per annum—W. M. Warren, 21, North Audley Street, W.

Therapist, the—Monthly 6d—1, 3, and 5, Marylebone Lane, W.

Treatment — Fortnightly 6d—129, Shaftesbury Avenue, W.C.

Veterinary Journal—Monthly 1/6— Baillière & Co., King William Street, W.C.

West London Medical Journal— Quarterly — Bale Sons, and Danielsson, Ltd., Great Titchfield Street, W.

Westminster Hospital Reports— Yearly 8/—7, Gt. Marlborough Street

Year Book of Pharmacy—Annually 10/—J. & A. Churchill, 7, Great Marlborough Street

Zoological Record—Annually 30/- —Gurney & Jackson, Paternoster Row

Zoological Society of London, Proceedings—Quarterly 3/- plain; 12/- coloured—Longmans & Co Paternoster Row

Zoologist—Monthly 1/- — Simpkin and Co. Paternoster Row

The Medical Annual Note Book.

It is easier to make a note of a thing than to remember *where* the note was made. The following pages are indexed under their respective headings, and any note can be immediately found when required.

NOTES.

Copy here any formula or fact you wish to keep for reference. These pages are indexed under the word "Notes.")

Estab. 1875.

MEDICAL TRANSFER AGENCY.

MR. PERCIVAL TURNER,

(Son of a well-known Practitioner, and Author of "Guide to Medical Profession,")

4, Adam Street, Adelphi, LONDON, W.C.

Partnerships and Practices negotiated. Assistants and *Locum Tenens* introduced. Arbitrations, Valuations, Investigations and Accountancy work. Printed Terms on application.

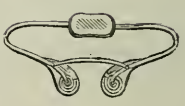
NOTES.

J. WRIGHT & CO., BRISTOL, Medical Publishers, and Printers,

Are prepared to negociate for the **Printing** and **Publication** of **Medical** and **Scientific Works** of every description, and their facilities for this class of work are of a very high order.

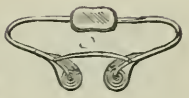
NOTES.

COLES' SPIRAL SPRING TRUSS:
INVENTORS AND PATENTEES,
WILLIAM COLES & Co., 225, Piccadilly, LONDON, W.



ADDRESSES (PRIVATE).

COLES' SPIRAL SPRING TRUSS:
INVENTORS AND PATENTEES,
WILLIAM COLES & Co , 225, Piccadilly, LONDON, W.



NURSES.

Note whether Midwifery or Sick Nurses, their terms and private address.

"Sparklets" **Small Steel Receivers containing compressed Carbonic acid gas for the instantaneous Aeration of all Liquids in the Home.**

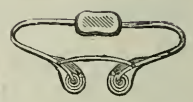
See page 845.

NOTES.

GAUTIER FRÈRES' *ESTABLISHED* 1755.
FINE LIQUEUR BRANDY.
(20 YEARS OLD.) — *See Advertisement, page 1.*

INSTRUMENTS, APPLIANCES, OR MATERIALS WANTED.

COLES' SPIRAL SPRING TRUSS:
INVENTORS AND PATENTEES,
WILLIAM COLES & Co., 225, Piccadilly, LONDON, W.

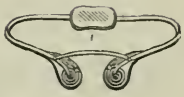


DRUGS WANTED.

COLES' SPIRAL SPRING TRUSS:

INVENTORS AND PATENTEES,

WILLIAM COLES & Co., 225, Piccadilly, LONDON, W.



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DRUGS WANTED.

J. WRIGHT & CO., BRISTOL, **Medical Publishers, and Printers,**

Are prepared to negociate for the **Printing** and **Publication** of **Medical** and **Scientific Works** of every description, and their facilities for this class of work are of a very high order.

Cadbury's COCOA

ABSOLUTELY PURE, THEREFORE BEST.

CADBURY'S Cocoa, on the testimony of the *Lancet*, 'represents the standard of highest purity." It is entirely free from all foreign substances, such as Kola, Malt, Hops, &c., nor is alkali used to darken the colour (and so deceive the eye).

THE BRITISH MEDICAL JOURNAL—*Article on "Drugged Foods," June 4th, 1898—says:* "There is a general consensus of opinion that the addition of active drugs, belonging to the class of nervine stimulants, to beverages and articles of dietary in ordinary domestic use is not for the benefit of the community, and is likely in time to produce a deterioration of the public health. . . At the present moment we are beset by another danger arising from the addition of Kola to certain articles of Food. . . Kola has been found on analysis to contain 2·13 per cent. of caffeine. Caffeine is undoubtedly a useful drug when employed in suitable cases and in appropriate doses, but if taken habitually in large quantities it is capable of inducing an undesirable condition of over-stimulation of the nerve centres."

CADBURY'S Cocoa is very easily digested; it imparts new life and vigour to those of delicate constitution, and can be safely and beneficially taken by the robust and delicate alike.

CADBURY'S Cocoa is a Perfect Food

76th YEAR.

YORKSHIRE INSURANCE CO.

(*ESTABLISHED AT YORK*, 1824.)

FIRE—LIFE—ANNUITIES—EMPLOYERS' LIABILITY.

Capital (Authorised) £1,000,000 | Accumulated Fund - £1,203,644
,, (Subscribed) £500,000 | Annual Income - - £258,826

Trustees—The Right Hon. Lord DERWENT. The Right Hon. Lord WENLOCK.

Head Office - - YORK.
London Office: 82, OLD BROAD STREET, E.C.

SPECIMEN RATES—Annual Premium to insure the Sum of £100.

Age next Birthday	Premium Payable for the whole of Life.		Limited Payments.				Age next Birthday.
			Table V. With Profits.		Table VI. Without Profits.		
	Table I. With Profits.	Table II. Without Profits.	20 Payments only.	25 Payments only.	20 Payments only.	25 Payments only.	
25	£2 3 10	£1 16 1	£3 3 3	£2 15 11	£2 12 1	£2 6 0	25
30	2 9 1	2 0 9	3 8 8	3 0 10	2 16 10	2 10 5	30

Endowment Insurances payable at a specified age or at previous death.

Age next Birthday.	Table III. With Profits.		Table IV. Without Profits.		* New Table with Deferred Profits.		Age next Birthday.
	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	
25	£3 5 6	£2 16 8	£2 15 0	£2 7 5	£2 19 9	£2 11 1	25
30	4 0 2	3 7 3	3 8 0	2 16 8	3 14 3	3 1 7	30

* In case of death before the Endowment Age the sum insured only will be payable.

SPECIAL Attention is called to the Liberal Options which are now obtainable under any of the **Endowment Tables** of the Company, on the attainment of the Endowment Age. These are:—

1.—Payment of the full Sum Insured in Cash, with Bonuses.

2.—The Insurance to be continued without further payment of premium for the original amount of the Policy. The Bonuses, and the balance of the sum insured after providing for this Paid-up Policy, will be paid in cash.

3.—A Paid-up Policy FOR AN INCREASED AMOUNT, payable at death.

In cases 2 and 3 proof of good health will be required.

4.—A **Pension** to be drawn for the remainder of life, and in addition, a Paid-up Policy, without further payment of premium, for the original sum insured.

5.—A **Pension** for the remainder of life.

6.—A **Pension** to wife or child.

7.—A **Deferred Pension** to commence at the death of the life insured, and be payable during the life of the widow, or of a child.

FIRE INSURANCES effected by the Company on the most moderate terms, according to the nature of the risks.

OFFICES AT BIRMINGHAM, BRISTOL, DUBLIN, GLASGOW, HULL, LEEDS, LIVERPOOL, MANCHESTER AND NEWCASTLE.

APPLICATIONS FOR AGENCIES INVITED.

INDEX TO LIFE ASSURANCE OFFICES.

A, *when Established;* B, C, D, *Annual Premiums to Insure £100 on death with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices;* P, *Proprietary Offices.*

Those marked with an asterisk (*) in the E column have not sent revised figures for 1899.

Title, &c., of Office.	A	B	C	D	E
					£
Abstainers and General, Life and Accident, Carrs Lane, Birmingham. *Sec.*, R. A. Craig, A.I.A. P	1883	40/11	55 10	82 3	150,000
Alliance, Fire and Life, Bartholomew Lane, E.C. *Sec.*, Robert Lewis .. .. .. P	1824	48/9	64 5	90 9	3,125,358
Atlas, Fire & Life, 92, Cheapside, E.C. *Act.*, Robert Cross. *Sub. Man.*, A.W. Yeo. *Gen. Man.*, Saml. J. Pipkin. *Further particulars see page* 746 P	1808	49 3	63 7	88 8	1,602,412
British Empire, Mutual Life, 4 & 5, King William Street, E.C. *Gen. Man.*, G. H. Ryan .. M	1847	47/2	63 9	92 3	2,800,000
British Equitable, Life, Queen Street Place, E.C. *Man.*, J. W. Fairey *Further particulars see page* 749 .. .. P	1854	49/-	66/-	94 3	1,718,504
British Workman's and General, Life and Endowments, Broad Street Corner, Birmingham. *Chairman*, F.T. Jefferson, J.P. *Sec.*, S. J. Port, F.I.S. P	1866	46 2	62 1	89 6	423,857
Caledonian, Fire and Life, 19, George Street, Edinburgh. *Man.*, D. Deuchar. London Office, 82, King William Street, E.C. .. .. P	1805	48/9	64 6	88 6	1,645,364
City of Glasgow, Life, 30, Renfield Street, Glasgow. *Man.*, Wm. S. Nicol. London Office, 12, King William Street, E.C. *Sec.*, Jas. D. Milne P	1838	49 6	64 6	89 10	2,431,989
Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. *Act.*, F. B. Wyatt. *Sec.*, G. H. Hodgson M	1829	46/4	62 2	87 4	4,128,711
Clerical, Medical and General, Life, 15, St. James' Square, and Mansion House Buildings. *Act.*, W. J. H. Whittall .. .. .. P	1824	48 7	66 9	96 3	3,590,306
Colonial Mutual, Life and Annuity, 33, Poultry. *Man.*, Edward W. Browne .. .. M	1873	47 4	63 2	89 9	2,261,656
Commercial Union, Fire, Life and Marine, 24, 25, and 26, Cornhill, E.C. *Act.*, T. E. Young, B.A. *Assist. Actuary.* A. D. L. Turnbull .. P	1861	49 5	64 2	87 8	*1,909,707
Co-operative, Life, Personal Accident, Fire & Fidelity, Long Millgate, Manchester. *Sec.*, James Odgers P	1867	45 8	61 5	88 4	20,865
Eagle, Life, 79, Pall Mall, S.W. *Gen. Man.* and *Sec.*, Geo. R. Jellicoe .. .. .. P	1807	50 8	65 5	91 4	2,487,800
Economic, Life, 6, New Bridge Street, Blackfriars. *Act.* and *Sec.*, G. Todd, M.A., F.I.A. M	1823	44 4	59 6	85 5	3,996,933
Edinburgh, Life and Annuities, 22, George Street, Edinburgh. *Man.*, G.M. Low, F.F.A., F.I.A. *Sec.*, A Hewat, F.F.A., F.I.A. London Office, 11, King William Street, E.C. *Sec.*, Frank Griffith P	1823	47 7	63 2	89/-	3,283,212
English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. *Gen. Man.*, Arthur Jackson .. .. P	1839	49 6	65/2	90 11	2,301,068
Equitable Life Assurance Society, Mansion House Street, E.C. *Act.*, H. W. Manly *Further particulars see page* 748 .. .. .. M	1762	53 5	67 11	90 7	4,506,436
Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. *Act.*, A. F. Burridge, F.I.A. .. .. P	1844	48 10	64 6	90 9	3,376,327
Friends' Provident, Life, Annuities, &c., Bradford, Yorkshire. *Act.* and *Sec.*, John Bell Tennant. M	1832	45/9	58 1	79 3	2,750,000
General Life, 103, Cannon Street, E.C. *Man.* and *Sec.*, John Robert Freeman. *Further particulars see page* 750 .. .. .. P	1837	49/10	65/4	92 8	1,667,706

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40 *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices*; P, *Proprietary Offices.*

Title, &c., of Office.	A	B	C	D	E
					£
Gresham, Life, St. Mildred's House, E.C. *Man.* and *Sec.*, James H. Scott .. P	1848	49/-	65 8	94/3	6,885,433
Guardian, Fire and Life, 11, Lombard St., E.C., and 21, Fleet Street. *Sec.*, T. G. C. Browne.. P	1821	48 10	64 6	89 3	2,958,999
Hand-in-Hand, Fire, Life and Annuities, 26, New Bridge St., Blackfriars, E.C. *Sec.*, H. H. Ray M	1696	53 7	69 10	96 2	2,835,811
Imperial, Life, 1, Old Broad Street, and 22, Pall Mall. *Gen. Man.* and *Act.*, J. Chisholm, F.I.A. *Sub. Man.* and *Joint Act.*, Fredk. Bell, F.I.A.. .. .. P	1820	46/11	62 1	87 5	2,332,504
Lancashire, Life, Fire & Employers' Liability, Exchange St., Manchester. *Gen. Man.* Digby Johnson, London Office, 14, King William St., E.C. *Sec.*, John P. Read .. .. P	1852	48 6	63 6	90 6	1,078,086
Law Life, 187, Fleet Street. *Man.*, E. H. Holt. *Act.*, A. B. Adlard .. .. .. P	1823	49 4	64 10	91 -	3 943,871
Law Union & Crown, Life, Fire, Accident & Annuities, 126 Chancery Lane. *Gen. Man.*, A. Mackay P	1825	48 4	64 -	89 10	4,019,938
Legal and General Life, 10, Fleet Street, E.C. *Act.* and *Man.*, E. Colquhoun .. .. P	1836	50/9	65/11	90/9	3,200,000
Life Association of Scotland, 82, Prince's Street, Edinburgh. *Man.*, John Turnbull Smith. *Sec.*, J. Sharp. London Office, 5, Lombard Street. *Sec.*, J. C. Wardrop .. .. .. P	1838	50/-	65/4	93/4	4 948,148
Liverpool and London and Globe, Fire, Life and Annuities, 1 Dale St., Liverpool. *Gen. Man. & Sec.*, John M. Dove. London Office, 7, Cornhill, E.C. *Act. & Rest. Sec.*, A. Hendriks, F.I.A. P	1836	49/3	65/6	91/3	5,220,709
London and Lancashire, Life, 66 & 67, Cornhill, E.C. *Genl. Man.* & *Act.*, W. P. Clirehugh. *Sec.*, G. W. Mannering .. .. P	1862	46/10	62/4	86/10	1.306,4,8
London Assurance Corporation, Fire, Life and Marine, 7, Royal Exchange. *Man.* of Life Dept., James Clunes. *Act.*, Geo. King .. P	1720	49 6	64 11	91 5	2,147,480
London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Farringdon Street, E.C. *Sec.*, T. V. Cowling. *Gen. Man.*, Thos. Neill P	1881	48/11	64/7	92/-	211,535
London Life Association, Lim., 81, King William St., E.C. *Act.* and *Sec.*, C. D. Higham. F.I.A. M	1806	60 4	78 10	108 4	*4,381,663
Marine and General Mutual, Life and Marine, 14, Leadenhall St., E.C. *Act.* and *Sec.*, S. Day, F.I.A.. .. .. M	1852	48 10	65 11	91 11	*886,208
Metropolitan Life, 13, Moorgate St., E.C. *Act.* and *Sec.*, L. M. Simon. *Further particulars see page* 750 .. .. M	1835	49 9	66 4	92/-	*2,036,938
National Assurance of Ireland, Fire, Life, and Annuities, 3, College Green, Dublin. London Office, 47, Cornhill, E.C. .. .. P	1822	48 7	64 3	91 7	*359,916
National Guardian, Life, 21, New Oxford St., W.C. *Man. Dir.*, Jas. Turnbull. *Sec.*, Chas. Hugonin P	1865	48 6	64 8	86 8	*16,363
National Mutual Life, 39, King Street, Cheapside, *Act.* and *Man.*, Geoffrey Marks, F.I.A. *Joint Secs.*, H. G. Rowsell and H. J. Lockwood. *Asst. Act.*, R. Todhunter, M.A., F.I.A. .. M	1830	48 4	63 7	89 6	2,600,428
National Provident, 48, Gracechurch Street, E.C. *Act.* and *Sec.*, Arthur Smither .. .. M	1835	50/2	66 3	91/1	5.379,356
New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. *Gen. Man.*, C. Seaton Lindsay. *Sec.*, Wm. R. Collinson ..	1845	48 9	65/-	96 11	48,652,335
North British & Mercantile, Fire, Life & Annuities, 61, Threadneedle Street, E.C., and 64, Princes Street, Edinburgh. *Life Man.* and *Act.*, London, H. Cockburn, *Sec.*, F. W. Lance. *Further particulars see page* 747 .. .. .. P	1809	49 10	66 1	91 11	10,507,010

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40 *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* **M**, *Mutual Offices*; **P**, *Proprietary Offices.*

TITLE, &c., OF OFFICE.	A	B	C	D	E
					£
Northern Assurance, 1, Moorgate St., E.C. *Gen. Man.*, H. E Wilson .. .. .. P	1836	49/-	64/8	90/10	3,505,873
Norwich Union, Life, Norwich. *Sec.*, J. J. W. Deuchar. London Office, 50, Fleet Street, E.C. *Further particulars see page* 751 ..	1808	45 8	59/6	85/3	3,645,690
Patriotic Life, Fire, Employers' Liability & Fidelity Guarantee, 9, College Green, Dublin. *Man.*, B. H. O'Reilly. *Act.*, Saml. Hunter. London Office, 69, King William St., E.C. *Man.*, Chas. E. Strong P	1824	48/8	64/5	90/4	*164,152
Pearl, Life, London Bridge, City, E.C. *Man.*, P. J. Foley .. .. P	1864	49/-	65/-	92/-	813,215
Pelican, Life, 70, Lombard Street, 57, Charing Cross, *Gen Man.*, James Sorley, F.I.A., F.R.S.E. P	1797	48 11	64/9	91/7	1,323,746
Provident, Life, 50, Regent Street. *Sec.*, C. Stevens P	1806	50/2	66/4	92/10	3,170,080
Provident Clerks, Life and Benevolent Fund, 27 and 29, Moorgate Street, E.C. *Hon. Sec.*, John E. Gwyer.. .. .. M	1840	46/4	62/8	92/2	2,000,000
Prudential (Ordinary), Life, Holborn Bars. *Sec.*, W. J. Lancaster. *Further particulars see page* 749 .. .. P	1848	49/6	65/11	91/11	17,156,951
Refuge, Life, Oxford Street, Manchester. *Joint Mans.*, Jas. Proctor & R. Wm. Green. London Office, 29, New Bridge Street .. .. P	1864	49/3	65/9	91/9	1,291,206
Rock, Life Annuity, Capital in Redemption, Workmen's Compensation & Accident, 15, New Bridge Street, E.C. *Act.*, G. S. Crisford, F.I.A. P	1806	42/5	55/11	81/2	2,186,394
Royal, Fire, Life and Annuities, Royal Insurance Buildings, Liverpool. *Man.*, Chas. Alcock. London Offices, Lombard St. *Sec.*, Jno. H. Croft P	1845	49/9	64/1	88/3	5,830,494
Royal Exchange Assurance, Fire, Life, Annuities, &c., Royal Exchange, and 29, Pall Mall. *Act.*, H. E. Nightingale, F.I.A. .. . P	1720	48 11	65/-	92/7	2,456,894
Sceptre, Life and Endowments, 40, Finsbury Pavement, E.C. *Sec.*, J. G. Phillips.. .. P	1864	48 8	64/8	90/6	818 044
Scottish Amicable, Life, St. Vincent Place, Glasgow. *Man.*, N. B. Gunn. *Sec.*, W. G. Spens M	1826	51/9	66/3	90/1	3,974,604
Scottish Equitable, Life, 28, St. Andrew Square, Edinburgh. *Man.*, T. B. Sprague, M.A., LL.D. *Sec.*, J. J. McLauchlan. London Office, 19, King William Street, E.C. *Sec.*, F. R. Leftwich M	1831	50/3	65/5	90/9	4,203,187
Scottish Imperial, Life, 183, West George Street, Glasgow. *Man.* and *Act*, James Stirling, F.F.A. London Office, 15, King William Street, E.C. P	1865	46/7	63/5	91/7	466,048
Scottish, Life, Accident and Annuities, 19, St. Andrew Square, Edinburgh. *Man.*, David Paulin, F.R.S.E. London Office, 13, Clements Lane, King William Street, E.C. *Sec.*, George Struthers P	1881	49/5	64 6	90/5	465,591
Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. *Man.*, Wm. G. Bloxsom. London Office, 8. King Street, E.C. *Man.*, H. E. Marriott .. .. P	1876	40/8	54/7	79/7	386,993
Scottish Provident, Life and Annuities, 6, St. Andrew Square, Edinburgh. *Man.*, J. G. Watson. *Secs.*, J. Lamb and H. R. Cockburn. London Office, 17, King William Street, E.C. *Sec.*, J. Muir Leitch .. .. M	1837	41/6	54/9	81/7	11,000,000
Scottish Temperance. Life and Accident, 105, St. Vincent St, Glasgow. *Man.*, Adam K. Rodger. London Office, 96, Queen Street, Cheapside. *Man.*, W. A. Bowie .. .. P	1883	48/6	63/9	89/10	441,755
Scottish Union and National, Fire, Life, and Annuities, 35, St. Andrew Square, Edinburgh. *Sec.*, J. K. Macdonald. London Office, 3, King William Street, E.C. *Sec.*, William Porteous.. P	1824	50/-	65/-	90/-	*3,742,789

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Standard Life, 3, George Street, Edinburgh. *Man.* and *Act.*, S. C. Thomson. London Offices, 83, King William Street, and 3 Pall Mall East. *Sec.*, J. H. W. Rolland .. .. .. P	1825	48/11	64/5	89/-	*8,456,936
Star, Life, Annuities, Endowments, 32, Moorgate Street, City. *Act.* and *Sec.*, H. G. Hobson P	1843	48/9	64/11	90/6	*4,375,760
Sun, Life, 63, Threadneedle Street, E.C. *Act.*, R. Sewell. *Sec. & Gen. Man.*, E. Linnell. P	1810	49/2	66/6	94/2	4,000,000
Union, Fire and Life. Cornhill, and Baker Street. *Sec.*, C. Darrell .. .. .. P	1714	48/9	64/6	90/10	2,245,492
United Kent, Life and Annuities, High Street, Maidstone. *Gen. Man.*, Walter L. Seyfang. London Office, 124, Cannon St., E.C. *Man.*, A. Wallis P	1824	49/8	64/3	90/5	567,538
United Kingdom Temp., &c., Life, 1, Adelaide Place, London Bridge. *Sec.*, Johnson Brooks M	1840	48/10	64/11	90/6	7,000,000
Universal, Life, 1, King William Street, E.C. *Act.* and *Sec.*, G. F. Hardy, F.I.A. .. P	1834	49/-	65/-	92/3	772,130
University, Life, 25, Pall Mall, S. W. *Act.* & *Sec.*, H. W. Andras, F.I.A. .. .. P	1825	49/11	65/4	91/5	1,056,807
Victoria, Life and Endowment, Memorial Hall Buildings, Farringdon Street, E.C. *Sec.*, Arthur J. Cook, A.I.A. .. .. .. M	1860	49/3	65/7	93/-	93,128
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25	£2 4 8	£2 9 7	£2 17 5	£1 14 8	£1 18 6	£2 5 1
30	2 9 3	2 16 6	3 8 3	1 18 6	2 4 2	2 14 7
35	2 15 5	3 6 7	4 3 5	2 3 9	2 12 7	3 8 5
40	3 3 7	4 2 0	5 6 4	2 10 11	3 5 8	4 9 9
45	3 14 6	5 7 8	7 5 2	3 0 9	4 7 10	6 6 11
50	4 8 8	7 17 3	11 2 5	3 13 10	6 10 11	10 2 3

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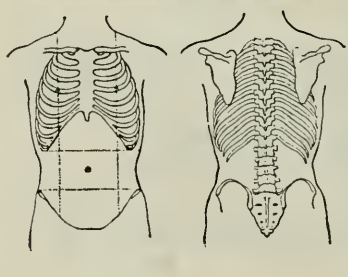

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By Authority of the Senatus,

November, 1899. L. J. GRANT, *Secretary of Senatus.*

Royal College of Surgeons of Edinburgh.

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Consulting Physician for Diseases of Women—Dr. G. M. Carfrae
Physicians—Dr. Galley Blackley, Dr. Byres Moir, Dr. Washington Epps, Dr. Marsh, Dr. Cavendish Molson,
Assist. Physicians—Dr. Goldsbrough, Dr. Mac-Nish, Dr. Spencer Cox, Dr. Leo Rowse
Surgeon—Mr. Knox Shaw
Assist. Surgeons—Mr. Dudley Wright, Mr. James Johnstone
Surgeon for Diseases of the Throat, Nose, and Ear—Mr. Dudley Wright
Assist. Surgeon for Diseases of the Throat, Nose, and Ear—Dr. Vincent Green
Ophthalmic Surgeon—Mr. Knox Shaw
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Phys. for Dis. of the Skin—Dr. Galley Blackley
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UNDER THE 1879 ACT OR PRIVATELY.

J. M. HOBSON, M.D., B.Sc., can receive, under his personal care, a few LADIES, in a house adjoining his own extensive grounds. Efficient isolation. Every facility for congenial work and recreation Experienced Lady in charge.

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FOR THE TREATMENT OF CONSUMPTION, is situated on the Mourne Mountains 350 feet above sea level, and 600 feet from the summit of Knockbarragh Mountain. Free from strong winds and mountain mist, in beautifully wooded grounds on gravel soil. Water supply from a well bored into the granite. Electric installation. Specially constructed building for open-air treatment. Terms 3½ guineas per week.

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Open-Air Treatment of Consumption

WHITMEAD HILL, near FARNHAM.

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THE House stands in 18 acres of fragrant pines and heather, on a southern slope of Crooksbury Hill, which shelters it from the north. Pine woods also shelter it from the east; it faces due South, and all the rooms are lighted by electricity, and have fire places; corridors, drawing-room, etc., being heated in addition by hot-water coils. The walks are very extensive, and vary from level to very steep.

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Electric and Vapour Baths.

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HYDROPATHIC and HOTEL

FOR HEALTH AND PLEASURE.

The largest and best appointed in SCOTLAND.

Now Complete & Enlarged. PURE AIR 600 feet above the Sea Level.

EXCELLENT CUISINE. ELECTRIC LIGHT.
EVERY HOME COMFORT.

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Rheumatism, Gout, Sciatica, Neuralgia, ... Nervous Debility, Sleeplessness, Liver, Stomach & Kidney Complaints, Obesity, &c.

By a combination of Douche and Massage with the new powerful Electric Light Therapy, the course of treatment is greatly shortened.

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Patronised by Royalty, Li Hung Chang, The Shadzada, and the Elite from everywhere.
Excellent Cuisine, Passenger Elevator, Electric Light. Charges Moderate.

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ESTABLISHMENT & SANATORIUM,

MATLOCK, DERBYSHIRE.

Station—MATLOCK BRIDGE. Telegrams—"SMEDLEYS, MATLOCK."

W. CECIL SHARPE, M.D., and a House Physician.

A new suite of Baths has been added, including Turkish and Russian Baths for Ladies, Aix Douches, **Radiant Heat Baths,** and a complete Electric Installation for Baths and Medical purposes.

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Special provision for Invalids. American Elevator, Electric Light, Night attendance, Rooms well ventilated, and all Bedrooms warmed in Winter throughout the Establishment.

Massage and Weir-Mitchell methods of Treatment can always be given.

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FOR PATIENTS, VISITORS, REST AND CHANGE.

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(Separate Suites for Ladies and Gentlemen.)

FITTED UP IN THE BEST STYLE. ALL MODERN IMPROVEMENTS.

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"Nauheim," "Weir-Mitchell," and Electro-Therapeutic Treatment."

THE MOST COMPLETE STATIC, GALVANIC & FARADIC INSTALLATION

Electric Light throughout Establishment and Baths.

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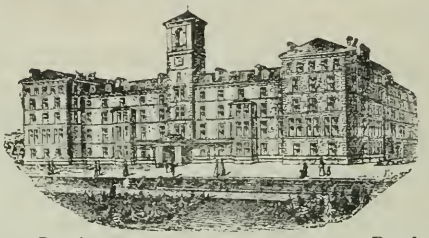

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WINTER TERMS, from £2 12 6 per week
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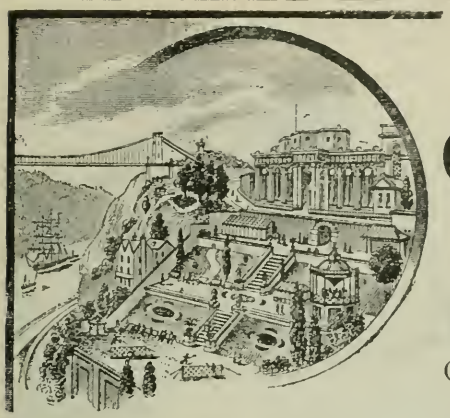

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BEAUTIFULLY situated on the brink of the Avon Gorge, 230 feet above the river, and near the Suspension Bridge: close to the Clifton and Durdham Downs (442 acres).

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430 FEET ABOVE SEA.

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Bathing arrangements specially adapted for very delicate patients.

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SHELTERED and sunny position. Lovely sea views. Ideal resort for Convalescents, Turkish, Sea-water Baths, Gymnasium and Billiards free to Residents. Massage. Electric, and every sort of medicated Bath; Nauheim and Aix Treatment. Carlsbad and Vichy Waters at natural temperatures free when prescribed by a medical practitioner.

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MURTLE (late Heathcot), near ABERDEEN.

THIS Establishment is now open, containing every modern condition for health, comfort, and convenience, including Electric Light, Elevator, Heated Corridors, Baths, &c.

The Climate of Deeside is the most bracing in Britain.

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RE-FURNISHED AND RE-DECORATED.

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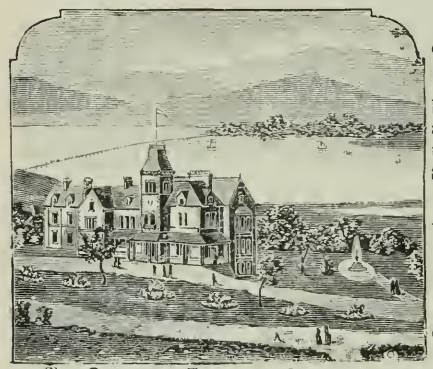

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The Establishment has just been extensively enlarged, and a new Electrical Department added.

Special Accommodation is now made for Invalids.

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Ordinary Terms: 2½ to 4 Guineas
(Reduced for a prolonged visit).

THE CLIMATE IS ESPECIALLY SUITABLE FOR THOSE WITH CHEST AFFECTIONS.

From London 5½ hours viâ L.N.W.R. *Prospectus on application to Manager.*

THE HAMMAM OR TURKISH BATH,

76, JERMYN STREET, S.W. (FOUNDED 1862.)

Total number of Bathers to 31st Dec.. 1899, 1,157,196.

The Bath is open daily from 7 a.m. to 9 p.m.; on Sunday from 9 a.m to 3 p.m. (Entrance by side door.)

TERMS OF ADMISSION:—

Annual Ticket ... . £8 8s.

7 a.m. to 7 p.m.—Single Ticket, 4s.; Six Tickets, 20s.; Twelve Tickets, 36s. (3s. each). After 7 p.m., Single Ticket, 2s.

Members of the Medical Profession (on presenting their card) can obtain Medical Tickets at the reduced rate of 2s.

No Tickets issued after 8 p.m. Bath closes at 9 p.m.

EXPERIENCED MASSEURS can be provided to attend upon Gentlemen at their own residence on application to the Secretary; or Gentlemen may be massaged at the Hammam without going into the Hot Rooms of the bath.

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Breakfasts and Luncheons are served from 8 a.m., according to a fixed tariff. Oriental dishes are supplied. Coffee, Chocolate, Sherbet, Tobacco and Light Wines are also sold during the hours the bath is open.

Hair Dressing Gallery in the Bath for the use of bathers.

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BEDROOMS from 2/6 to 4/6.

Full Tariff and Testimonials Post Free on Application.

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Hot Mineral Springs of Bath

Daily yield upwards of Half-a-Million Gallons at a Temperature ranging from 117 to 120 Fahr.

THE Natural Mineral Waters of Bath are proved by the record of centuries to be most efficacious in cases of **Rheumatoid Arthritis, Rheumatism, Gout in its various forms, Skin Affections, &c.**

The Corporation of Bath has expended large sums in developing these Baths and adopting every appliance known to modern Balneology. They are now in point of luxury and completeness **"the most perfect in Europe."**

Scientific application of the waters may be obtained, including the Nauheim or Thermal-soolbäd Treatment, the Aix System of Massage, the "Table" Aix Massage Douche, and Berthollet or Natural Vapour Baths. Inhalation and Pulverisation Rooms are also provided.

ELECTRIC HOT AIR BATHS (GREVILLE SYSTEM).

Letters to the Baths Manager will receive immediate attention.

BATH IS ONLY TWO HOURS FROM LONDON.

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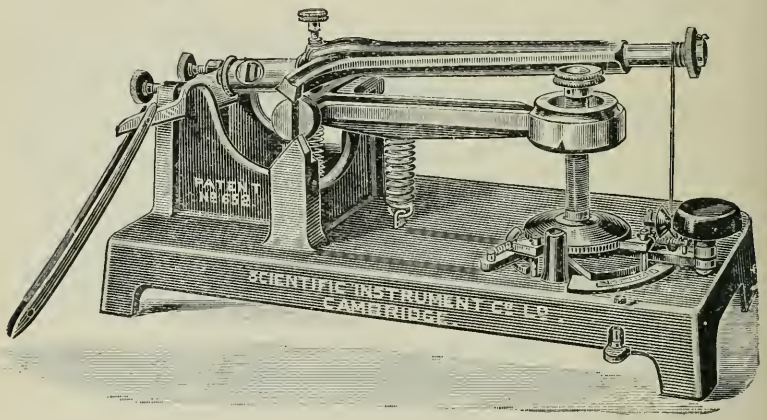
NEW ROCKING MICROTOME
(Patented.)
1900 PATTERN.



This Instrument possesses the following great improvements over the old types of Instruments:—

1.—Increased rigidity.
2.—The impossibility of cutting thick and thin sections.
3.—The impossibility of tearing sections on the upward movement of the object.
4.—A Graduated Arc for showing the thickness of the sections.
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Price, including Object Holder, £5.

WRITE FOR PAMPHLET DESCRIPTIVE OF ABOVE INSTRUMENT, ETC.

Catalogue of Physiological Apparatus sent Post Free on application.

ADDRESS ALL COMMUNICATIONS:—

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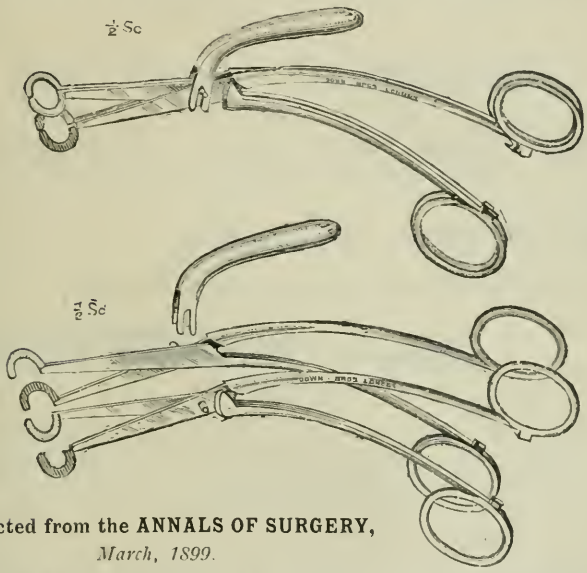
NEW FORCEPS for Intestinal Anastomosis.

By Dr. ERNEST LAPLACE, of Philadelphia.



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March, 1899.

The necessity, however, for rapidity and accuracy in suturing while performing the various operations for anastomosis of the intestines, as well as the simplification of the procedure, has led us to devise a forceps which presents the following characteristics:

(1,) It consists of two rings, introduced into the intestines to be anastomosed, and acts as a support to the parts while suturing them.

(2,) The forceps, beng separable into two halves, can be gently withdrawn from a small aperture still unsutured, and the anastomosis is completed by adding one or two sutures.

The method offers the following advantages: First, Rapidity and accuracy of suturing without leaving any foreign substance within the gut; Second, An absolute control of the field of operation by means of the assistance of the handles of the forceps; Third, The facility with which the forceps are applied, preventing the escape of intestinal contents during the operation.

There are five sizes of the forceps, for intestines of various calibre, as well as for the more delicate work on the gall-bladder.

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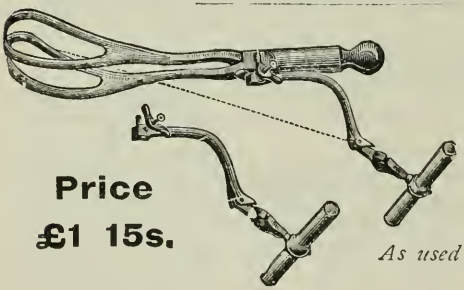

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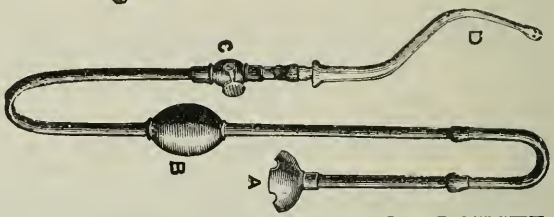

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Sliding Object Carrier, with rectangular divisions... ... ... extra	0	15	0
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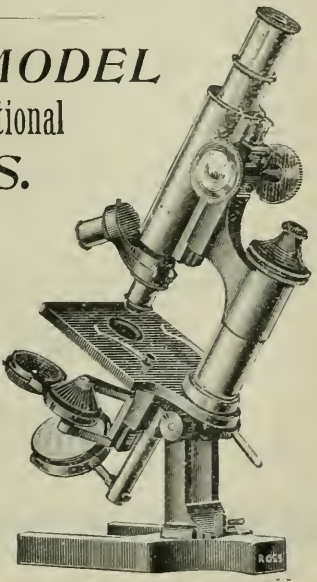

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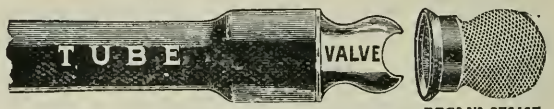

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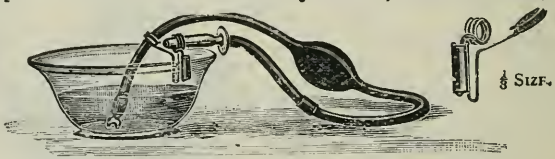

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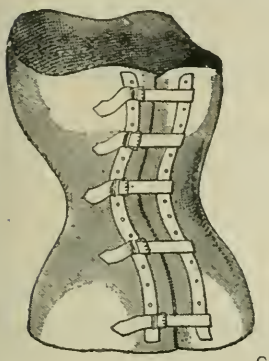

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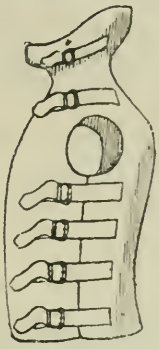

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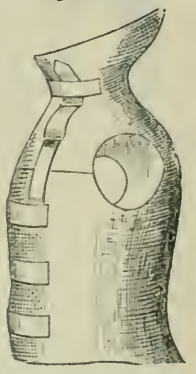

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Length from axilla to great trochanter.

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FOR ALL DISEASES OF THE KNEE, OR FRACTURE.

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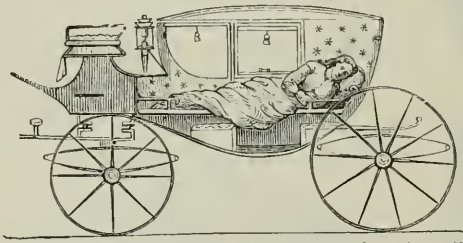

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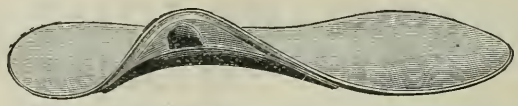

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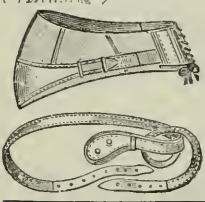

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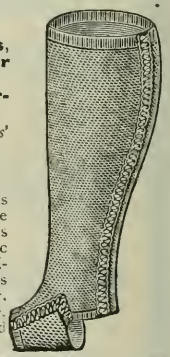

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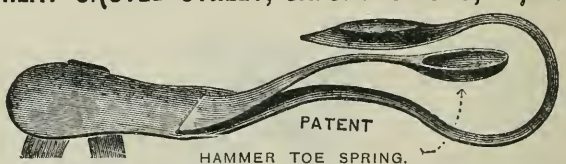

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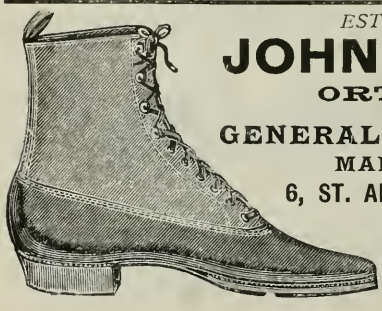

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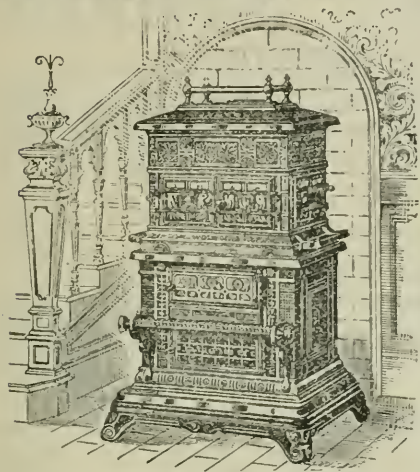

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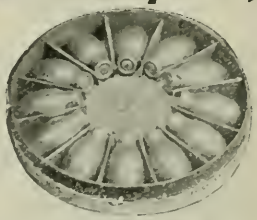

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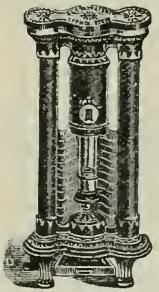

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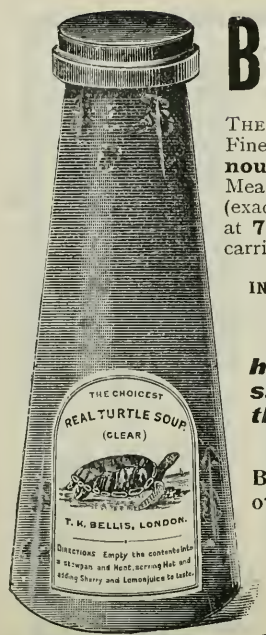
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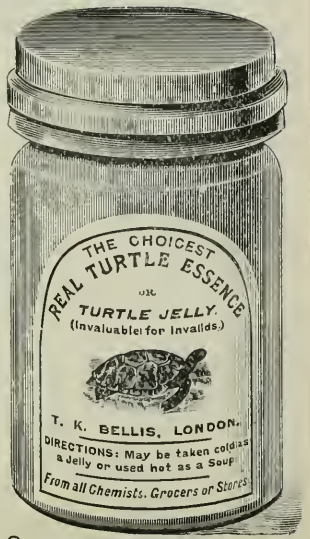
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Carriage Paid and inclusive.

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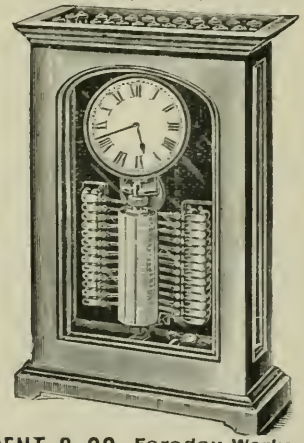

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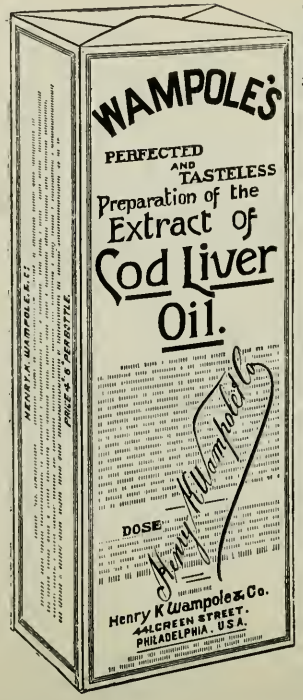

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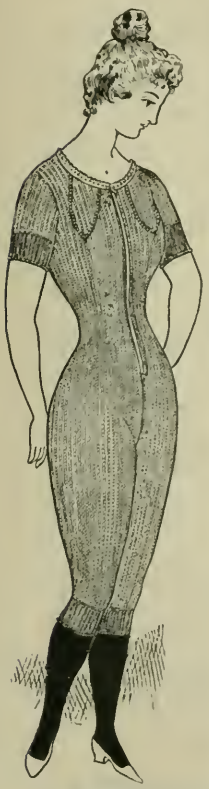

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